

## FOREWORD

### ABSTRACTS AND INDEXES FOR PROCEEDINGS, VOL. 85, 1959

This index provides a guide to material published in the ASCE Proceedings during 1959. The abstracts indicate what general information can be found in the paper in question. The author index includes the names of authors, co-authors, discussers, and chairmen of the committees preparing the several reports. Subject headings have been restricted as follows:

1. Each paper is listed under one primary heading suggested by the name of the Journal in which the paper appeared.
2. A second listing of a paper is made if further refinement of indexing is deemed advisable. In the second listing, an attempt is made to index papers of interest to several Divisions under the headings suggested by the Division names.
3. A geographic indexing is made (by states of the United States and by countries) where location is of particular importance.

Discussions can be traced by referral in the author index to the name of the senior author of a paper. Discussion over a period of time can be traced in this fashion until the closing discussion is located.

Typical abbreviations used herein are: Dsc for "discussion," Clo for "closing discussion," Rt for "report," Corr for "corrections," and Chmn for "chairman" of a committee submitting a report. All numbers refer to the number of the Proceedings Paper. Immediately following the paper number the letter and number symbols indicate the Journal in which the paper appeared.

Items indexed are identified by months as follows:

MONTH	PAPER NUMBERS	JOURNALS
January	1892-1932	AT1 (Air Transport), EM1 (Engineering Mechanics), HW1 (Highway), HY1 (Hydraulics), PL1 (Pipeline), SA1 (Sanitary Engineering), ST1 (Structural).
February	1933-1959	CO1 (Construction), HY2 (Hydraulics), PO1 (Power), SM1 (Soil Mechanics & Foundations), ST2 (Structural).
March	1960-1989	HY3 (Hydraulics), IR1 (Irrigation & Drainage), SA2 (Sanitary Engineering) ST3 (Structural), WW1 (Waterways & Harbors).
April	1990-2031	EM2 (Engineering Mechanics), HW2 (Highway), HY4 (Hydraulics), PO2 (Power), SM2 (Soil Mechanics & Foundations), ST4 (Structural).
May	2014-2047	AT2 (Air Transport) HY5 (Hydraulics), PL2 (Pipe-line), PP1 (Professional Practice), SA3 (Sanitary Engineering), ST5 (Structural).

MONTH	PAPER NUMBERS	JOURNALS
June	2048-2078	CP1 (City Planning), HY6 (Hydraulics), IR2 (Irrigation & Drainage), PO3 (Power), SM3 (Soil Mechanics & Foundations), ST6 (Structural), WW2 (Waterways & Harbors).
July	2079-2125	AT3 (Air Transport), EM3 (Engineering Mechanics), HY7 (Hydraulics), SA4 (Sanitary Engineering).
August	2126-2140	HY8 (Hydraulics), PO4 (Power), SM4 (Soil Mechanics & Foundations).
September	2141-2188	CO2 (Construction), HW3 (Highway), HY9 (Hydraulics), IR3 (Irrigation & Drainage), PP2 (Professional Practice), SA5 (Sanitary Engineering), ST7 (Structural), SU1 (Surveying & Mapping), WW3 (Waterways & Harbors).
October	2189-2240	AT4 (Air Transport), EM4 (Engineering Mechanics), HY10 (Hydraulics), PL3 (Pipeline), PO5 (Power), SM5 (Soil Mechanics & Foundations), ST8 (Structural).
November	2141-2270	HY11 (Hydraulics), SA6 (Sanitary Engineering), ST9 (Structural).
December	2271-2330	CP2 (City Planning), HW4 (Highway), HY12 (Hydraulics), IR4 (Irrigation & Drainage), PO6 (Power), SM6 (Soil Mechanics & Foundations), ST10 (Structural), WW4 (Waterways & Harbors).

## PROCEEDINGS ABSTRACTS

### JANUARY

**Journals:** Air Transport, Engineering Mechanics, Highway, Hydraulics, Pipeline, Structural, Sanitary Engineering.

**1892. Meeting USAF Blast Fence Requirements, by Temple A. Tucker. (AT)** This paper examines: (a) past blast-fence requirements and, (b) a new requirement generated by the B-52 and how the Air Force is meeting it.

**1893. Compressive Strength of Compacted Snow, by Gunner S. Pedersen. (AT)** Tests carried out with 10 cm cubes of compacted snow to determine the compressive strength and its variations with density are described.

**1894. Vortex Formation and Resistance in Periodic Motion, by John S. McNown and Garbis Keulegan. (EM)** Variations in coefficients of resistance and inertia have been correlated in laboratory tests on the basis of the interval required for the formation of a vortex.

**1895. Applications of Electrical Analogs of Static Structures, by Frederick L. Ryder. (EM)** This paper reviews problems concerning 3-dimensional frames, non-linear structures, partitioning of complicated structures to permit simulation on small analog instruments, applied deflections and thermal effects, and related experimental work.

**1896. On Longitudinal Waves in an Elastic Plate, by E. Volterra and E. C. Zachmanoglou. (EM)** The problem of dispersion of longitudinal waves in an elastic infinite plate is examined. Numerical results are compared with those obtained by applying the exact theory given by Lamb.

**1897. The Elastic Stability of Thin Spherical Shells, by Gideon P. R. von Willich. (EM)** Theoretical work relating

to elastic buckling of thin spherical shells is reviewed. A theory is presented for determining buckling pressures of shallow thin spherical shells under external pressure.

**1898. Simplification of Dimensional Analysis, by Charles C. Bowman and Vaughn E. Hansen. (EM)** Two successive methods for simplifying the conventional method of dimensional analysis are presented.

**1899. Early Soil-Cement Research and Development, by Miles D. Catton. (HW)** The scientific and engineering principles applied, and the testing procedures involved in the Portland Cement Associations research and development work on mixtures of solid cement are presented.

**1900. Highway Traffic Estimation by Linear Programming, by E. L. Killin (HW)** Linear programming may hold the key to obtaining solutions to traffic estimation problems. The resulting solution compared favorably with that arrived at by conventional methods.

**1901. Radar For Rainfall Measurements and Storm Tracking, by Glenn E. Stout. (HY)** The present status of research in the United States on the utilization of radar for measuring precipitation is reviewed.

**1902. Interim Consideration of the Columbia River Entrance, by John B. Lockett (HY)** Dredging to secure a 48-foot channel depth at the mouth of the Columbia River reveals the need for reevaluation of forces controlling the entrance area.

**1903. Air Model Studies of Hydraulic Downpull on Large Gates, by W. P. Simmons, Jr. (HY)** Air model studies were used to determine the hydraulic downpull forces on a large fixed-wheel

gate and on a slide gate. The applicability of air tests for this work is reviewed.

**1904. Application of Snow Hydrology to the Columbia Basin**, by Oliver A. Johnson and Peter B. Boyer. (HY) Applications to daily snowmelt and seasonal runoff forecasting for several sub-basins of the Columbia River are shown.

**1905. Flow Testing by Ammonia Displacement**, by Jack N. White and T. N. Thawley. (PL) The history, equipment, techniques and procedures for the ammonia displacement method in developing and executing flow efficiency determinations for large diameter natural gas transmission lines are examined.

**1906. Pipeline Construction in the Past, Present and Future**, by James W. Hall. (PL) This paper considers improvements in the art of pipeline construction of large diameter, long distance oil and gas lines. Future developments are briefly outlined.

**1907. A Boring Method for Pipeline Construction**, by James C. Fisher. (PL) This paper describes a construction method for driving of pipes below ground surface by jacking and boring.

**1908. Gilsonite Solids Pipe Line**, by E. F. Fulkerson and J. E. Rinne. (PL) The features of a 72-mile solids pipe line, considerations affecting its design, construction, and problems that have developed are given.

**1909. Strength of Reinforced Concrete Beams**, by Sidney A. Guralnick. (ST) Rational interaction equations for the failure of plain concrete under stress are developed on the basis of Mohr's failure theory.

**1910. Elastic Resistance of Reinforced Concrete Beams**, by G. R. Swihart, J. R. Allgood and W. A. Shaw. (ST) A theory is presented for determining the static resistance characteristics of uniformly loaded reinforced concrete beams. Attention is given to predicting ultimate deflection.

**1911. Design of Pitched and Curved Timber Diaphragms**, by Henry J. Degenkolb. (ST) A review of the internal action of timber diaphragms is presented together with a study of the stresses caused by curving or sloping portions of the diaphragm to conform to common truss shapes.

**1912. Timber Bridges on the Railways**, by C. V. Lund. (ST) The use and advantages of timber trestles on railways are given. Specifications, features of design and construction, and a resume of current studies toward improved design are presented.

**1913. Timber Fastenings**, by Ralph H. Glass. (ST) This paper presents the role of fastenings in new construction methods for light framing, and a new "family" of light-gage devised for trussed rafter connections.

**1914. On the Solution of Rigid Frames by the Column Analogy**, by Thomas D. Y. Fok and Tung Au. (ST) This paper provides a proof for the application of the column analogy to the analysis of single-span rigid frames of any degree of redundancy.

**1915. Load Considerations for Beams**, by F. P. Drew. (ST) The cumulative duration of stress in railroad bridge stringers determined indicates that consideration may be given to increased fiber stresses in bending over currently allowable working stresses for trestles subjected to ordinary traffic.

**1916. Discussion of Proceedings Paper 1658, 1659**, (AT) W. K. Laing, G. S. Cooper, and Morris E. Adams on 1658. J. F. Newberg on 1659.

**1917. Discussion of Proceedings Paper 1693** (EM) A. T. Matthews on 1693.

**1918. Discussion of Proceedings Paper 1380, 1525, 1626, 1799**. (HW) Elmer B. Isaak no closure to 1380. Jack E. Leisch closure to 1525. John G. Dempsey on 1626. William Zuk on 1799.

**1919. Discussion of Proceedings Paper 1455, 1585, 1663**, (HY) J. C. Stevens



closure to 1455. C. O. Clark on 1585. Leo R. Beard on 1663.

**1920. Discussion of Proceedings Paper 1577, 1677, (PL)** M. B. McPhersen and J. V. Radziul on 1577. W. T. Ivey, John F. Schomaker on 1667.

**1921. Discussion of Proceedings Paper 1179, 1274, 1461, 1533, 1534, 1678, 1703, 1715, 1717, 1777, 1782, 1848, (SA)** Morris M. Cohn no closure to 1179. Sterling Brisbin no closure to 1274. J. C. Stevens and Richard Kolf closure to 1461. Gaurchandra Ghosh closure to 1533. C. G. Gunnersen closure to 1534. Herbert Moore on 1678. C. H. J. Hull on 1703. Louis Finaly on 1715. Edwin B. Cobb and Allen J. Burdoin on 1717. Samuel A. Greeley on 1777. Charles H. Capen on 1782. J. C. Stevens on 1848.

**1922. Discussion of Proceedings Paper 1354, 1510, 1695, 1696, 1708, 1709, 1711, 1712, 1722, 1818, (ST)** Robert E. McClellan no closure to 1354. Bengt Broms and I. M. Viest closure to 1510. Lydik S. Jacobsen, A. A. Eremin on 1695. Alfred L. Miller, Henry J. Degenkolb on 1696. Jacob Feld on 1708, 1709, 1711, 1712. Andrew Reti, Alexander Dodge on 1722. D.C. Gazis corrections to 1722. Homer M. Hadley on 1818.

**1923. The Rapid Design of Beams in Torsion, by Cedric Marsh. (EM)** This paper shows how simple beam formulas can be extended to deal with torsion and how, by considering torsional rigidity and torsion-bending rigidity separately, results of acceptable accuracy can be obtained.

**1924. Construction and Use of Models in Highway Planning, by F. B. Crandall. (HW)** Construction procedure and materials used in building scale models of projected highway interchange facilities and the use made of completed models in highway programming and planning are studied.

**1925. The Highway Cost Allocation Study, by G. P. St. Clair. (HW)** Determining costs and benefits derived from use of federal-aid highways by vehicles

of different dimensions and weights is the objective. Benefits to non-users are also studied.

**1926. Pipeline Instrumentation and telemetering Systems, by Michael D. Altfillisch. (PL)** This paper describes and defines the basic elements required in measurement, control and telemetering systems. Intergration of these elements into complete systems is illustrated.

**1927. Inventory of Highway Needs, by R. C. Blensly, (HW)** The procedures employed in Oregon to develop the need estimate for 12 systems considered to provide highways, roads, and streets for 1975 traffic volumes are outlined.

**1928. Vehicle Weight Phase of the Section 210 Study, by C. K. Glaze. (HW)** This study examines truck weight and usage data as essential in highway design, administration, and finance. Weights were obtained at locations representative of the rural and urban federal-aid highway systems.

**1929. Field Test of the Movement of Radioactive Cations, by Ben B. Ewing (SA)** A synthesized radioactive waste injected into a confined permeable underground formation was traced by radioassay of samples from monitoring walls. Results were correlated with field-scale hydraulic flow tests and a laboratory investigation of ion-exchange properties of earth material taken from the same formation.

**1930. Treatment of Liquid Radioactive Wastes, by Conrad P. Straub. (SA)** A review is presented of the methods used in handling, treating, and disposing of liquid radioactive wastes in the United Kingdom and Europe.

**1931. Water Pollution in our Changing Environment, by C. H. Atkins. (SA)** The increase in water usage has brought many challenges in the control of water pollution. All concerned must do their utmost to conserve and protect our water resources.

**1932. Radioactive Pollutants, Progress Report of Task Force VI of the Committee on Atmospheric Pollution of the Sanitary Engineering Division.** (SA) This report recognizes the extent of the airborne pollutant hazards being created by the expanded use of radioactive tracers and energy. Maximum contractions, as well as survey methods, instrumentation, and cleaning devices are examined.

## FEBRUARY

*Journals:* Hydraulics, Soil Mechanics and Foundations, Structural, Power, Irrigation and Drainage, Construction.

**1933. Unsteady Flow in Conduits with Simple Surge Tanks,** by E. H. Taylor, Arnold Reisman and Jack W. Ward. (HY) This paper presents a general solution to the simple tank problem in terms of a single dimensionless damping parameter for the case of instantaneous and complete load rejection.

**1934. Evaporation of Lake Ontario,** by Ira A. Hunt. (HY) Evidence is sited that precipitation over the Great Lakes is less than precipitation on adjacent land areas. Evaporation computed by the water budget method is reduced in the same amount as the precipitation.

**1935. Problems Concerning Use of Low Head Radial Gates,** by Thomas J. Rhone. (HY) Three hydraulic features of low head radial gates are examined. These are a general discharge equation, the effect of gate seat location on discharge capacity and pressure distribution along the spillway surface, and side and bottom seals.

**1936. Underseepage Control at Fort Randall Dam,** by S. T. Thorfinnson. (SM) A relief well system installed to control underseepage beneath Fort Randall, which is located on the Missouri River in southaestern South Dakota, is studied.

**1937. A Review of the Engineering Characteristics of Peat,** by Ivan C. Mac-

Farlane. (SM) A resume of information concerned with physical and mechanical properties of peat is presented.

**1938. Design Standards for Timber Structures,** by Robert E. Eby. (ST) This paper reviews the content and development of design standards as well as supplemental data pertraining to the use of wood as an engineering material.

**1939. Statistical Approach to Working Stresses for Lumber,** by J. D. Snodgrass. (ST) Working stresses are obtained by applying appropriate reductions to values selected at a low probability from strength distributions.

**1940. Analysis of a Two Way Truss System,** by John A. Sbarounis and Michael P. Gaus. (ST) Two methods of analysis for a two way system of trusses rigidly connected at points of intersection and rigidly or elastically supported, is presented.

**1941. Overload Factors Can Cause Ultra-Conservative Design,** by Richard N. Bergstrom. (ST) The use of overload factors in establishing design stress for reinforced concrete, prestressed concrete structures and steel transmission towers is reviewed.

**1942. Aseismic Design of Structures, by Rigidity Criterion,** by Edward Y. W. Tsui. (ST) A set of curves showing the proposed design seismic coefficients as function of the rigidity of structures is presented. These coefficients are based on the modified response spectra obtained by means of analog computers.

**1943. Self-Checking General Analysis of Rigid Frames with Sway,** by F. C. Keller. (ST) This paper describes a semi-graphical self checking process, by which plane rigid frames subject to sway are solved for moments, shears and axial forces simultaneously.

**1944. Correlation of Predicted and Observed Suspension Bridge Behavior,** by George S. Vincent. (ST) The validity

of model tests and analysis as an indication of the behavior to be expected of a suspension bridge in the wind is considered.

**1945. Boundary-Shear Stress in Unsteady Turbulent Pipe Flow**, by M. R. Carstens and John E. Roller. (HY) An analytical solution for the boundary-shear stress of unsteady turbulent pipe flow is presented based upon the hypothesis of similarity of velocity profiles of steady and unsteady flow.

**1946. Hydraulics of Circulating Systems**, by Clifton W. Bolieau. (PO) This paper reviews the factors entering into the design of condenser circulating water systems, with particular reference to those in the TVA system.

**1947. Passage of Young Fish Through Turbines**, by J. F. Muir. (PO) The hypothesis that mortality of young fish passing through turbines is caused mainly by exposure to cavitation is developed here.

**1948. 305,000 KW Extension to the Fisk Steam Electrical Station**, by Merle H. Goedjen, Richard M. Collins, and John P. Roche. (PO) This paper describes the design of a large single unit extension to an historic steam electric station. A study of its unusual features is included.

**1949. Site Studies for a Steam Power Plant**, by R. D. Chellis and E. Ireland. (PO) This paper emphasizes critical investigations, presents detailed estimates for each possible scheme and justifies the final choice of location.

**1950. Discussion of Proceedings Paper 1345, 1449, 1451, 1528, 1834.** (HY) Corrado Ruggiero corrections in 1345. Walter L. Moore and Carl W. Morgan closure to 1449. J. L. H. Paulhus and J. F. Miller closure to 1451. Hunter Rouse, T. T. Siao and S. Nagaratnam closure to 1528. K. R. Wright on 1834.

**1951. Discussion of Proceedings Paper 1439, 1537, 1550, 1654, 1655, 1727, 1728,**

**1729, 1730, 1731, 1826.** (SM) K. S. Lane no closure notice to 1439. E. B. Penrod, W. W. Walton and D. V. Terrell closure to 1537. Armand Mayer closure to 1550. D. Hugh Trollope on 1654. Jose A. Jimenez Salas, D. Hugh Trollope on 1655. Harry R. Cedergren on 1727. M. L. Dickinson, J. R. Kiely on 1728. Iearahy da Silveira on 1729. A. A. Eremin, N. N. Ambraseys on 1730. Bruce E. Clark, Herman L. Moor, Robert E. White on 1731. Thomas B. Kennedy corrections to 1731. Edward S. Barber on 1826.

**1952. Discussion of Proceedings Paper 1316, 1354, 1561, 1562, 1567, 1637, 1638, 1694, 1709, 1838, 1839, 1840, 1854, 1867, 1878, 1944.** (ST) E. J. Ruble on 1316. Raymond Archibald, on 1316. Alfred M. Freudenthal closure to 1316. Robert E. McClellan no closure notice to 1354. George Winter closure to 1561. Henry Malter closure to 1562. Harry Posner closure to 1567. T. J. McClellan closure to 1637. John E. Goldberg closure to 1638. J. G. MacGregor and C. P. Siess, Phil M. Ferguson on 1694. John S. McNown and Dorris Hankins on 1709. E. George Stern, Richard G. Kimbell, Jr. on 1838. E. George Stern on 1839. Donald G. Coleman corrections to 1840. Glen V. Berg on 1854. E. I. Fiesenheiser on 1867. George C. Ernst on 1878. F. B. Farquharson on 1944

**1953. Discussion of Proceedings Paper 1344, 1457, 1529, 1554, 1555, 1598, 1670, 1672, 1675, 1683, 1687, 1733, 1734, 1740, 1748.** (PO) Ewald Schmitz closure to 1344. F. W. Patterson, R. L. Clinch and I. W. McCaig closure to 1457. J. Barry Cooke closure to 1529. Claudio Marcello closure to 1554. Tatsuo Mizukoshi closure to 1555. Andrew Eberhardt closure to 1598. F. L. Lawton on 1670. F. L. Lawton on 1672. C. F. Colebrook, John B. Milne, J. Guthrie Brown, F. L. Lawton on 1675. F. L. Lawton on 1683. W. A. Brown, John V. Spielman, P. L. Aitken, F. L. Lawton, Claude A. Fetzer and Elton G. Knight, Harris C. Porter on 1687. Joseph C. Dodd on 1733. George K. Leonard on 1734. F. L. Lawton on 1740. Judson P. Elston on 1748.

**1954. Engineering Education and the Construction Industry: The Industry and the Colleges**, by D. W. Winkelman and C. R. Maar. (CO) This paper examines the influence of the engineering college on the engineer, stressing the importance of the humanities, and a practical working knowledge of the tools at hand.

**1955. Engineering Education and the Construction Industry: Graduates for Work in Construction**, by David A. Day. (CO) A modernized under-graduate curriculum benefiting the construction industry, should include report writing, public speaking, basic sciences, engineering sciences, analysis, economics and management, and some humanities.

**1956. Engineering Education and the Construction Industry: Modern Trends in Construction Engineering Education**, by Robert L. Schiffman. (CO) The current trends in engineering education towards a first degree in the engineering sciences and professional training similar to Law and Medicine are examined.

**1957. Engineering Education and the Construction Industry: The Engineering Profession in Construction**, by Roger Corbetta. (CO) Preparation for the construction industry should stress the coordinating by one person of all facets of a construction job from start to finish.

**1958. Engineering Education and the Construction Industry: Campus to Construction**, by H. A. Letoile. (CO) The construction industry has found a need to supplement the education of its civil engineers. One organization has established a four year program that trains college graduates to be construction executives.

**1959. Engineering Education and the Construction Industry: What the Industry Should Have From the Colleges**, by C. H. Oglesby and John W. Fondahl. (CO) The civil engineering profession has much to gain by strengthening its ties with construction and it should be done by construction sponsored research in the colleges, as well as bolstering the college curriculum.

## MARCH

**Journals: Hydraulics, Sanitary Engineering, Waterways and Harbors, Irrigation and Drainage, Structural.**

**1960. Calibration of a Submerged Broadcrested Weir**, by Richard A. Smith. (HY) This paper develops coefficients for the standard weir formula, treating the broadcrested weir with control either at the weir or in the tailwater when the weir is flooded or drowned out. For the latter condition, the coefficient varies as a function of the degree of submergence.

**1961. Tabular Solution of Open Channel Flow Equations**, by Henry A. Babcock. (HY) A table is presented by which cubic equations arising in open channel flow problems may be solved without the trial-and-error method. Use of this table is limited to the special case of rectangular channels.

**1962. Relationships Between Pipe Resistance Formulas**, by Walter L. Moore. (HY) The relationship between modern concepts of pipe resistance and older empirical formulas is clarified and an exponential formula applicable to a known range of flow conditions is derived.

**1963. Monthly Consumptive Use Requirements for Irrigated Crops**, by Harry F. Blaney. (IR) Data are presented on measured monthly rates of consumptive water use for irrigated crops in the western United States. A procedure is described for determining consumptive use requirements for crops from climatological data for areas where measurements are not available.

**1964. Drainage of Agricultural Lands Using Interceptor Lines**, by William W. Donnan. (IR) Very few textbooks assist the drainage engineer in designing an interceptor drain line. Some of the theories regarding the function and behavior of an interceptor drain are presented.

**1965. Upstream Irrigation Impact on Columbia River Flows**, by Harold T. Nelson. (IR) Analyses of long-time Columbia River flows at The Dalles, demonstrating magnitude of peak flow reductions and low flow increases due to upstream irrigation are given.

**1966. Investigation of an Artesian Well adjacent to a River**, by Verne H. Scott and J. N. Luthin. (IR) A pump test of an artesian well in a problem area located adjacent to a river is described.

**1967. Characteristics of Reactor Fuel Process Wastes**, by J. O. Blomeke, E. D. Arnold, and A. K. Gresky. (SA) Various types of high-level radioactive wastes produced as effluents from reactor fuel processing plants are examined according to their chemical composition, physical properties, and fission product activity levels.

**1968. Radionuclides in Reactor Cooling Water**, by Dade W. Moeller, George W. Leddicotte, and Sam A. Reynolds. (SA) Studies regarding the identification, source, and control of radionuclides in the recirculating type, cooling water system of the Low Intensity Test Reactor (LITR) at the Oak Ridge National Laboratory are summarized.

**1969. Rivet and Bolt Council Research**, by E. J. Ruble. (ST) The paper presents aims of the council and planning methods, investigations recently completed, and a complete bibliography of published reports is included.

**1970. Strength of Rivets and Bolts in Tension**, by W. H. Munse, K. S. Petersen, and E. Chesson, Jr. (ST) Fastener behavior in a tension-type structural connection was determined. Such factors as flexibility of the connected members, and the magnitude of the initial clamping force are considered, among others.

**1971. Behavior of Riveted and Bolted Beam-To-Column Connections**, by W. H. Munse, W. G. Bell, and E. Chesson, Jr. (ST) The tests reported herein were performed as the first phase of a study of the general behavior of beam-to-column connections assembled with rivets or bolts and including four standard flexible connections.

**1972. Fatigue Tests of Joints of High Strength Steels**, by Norman G. Hansen. (ST) Results of fatigue testing of indirect tension and joints made from structural steels having various properties are presented.

**1973. Effects of Fabrication Techniques on Bolted Joints**, by Desi D. Vasarhelyi, Said Y. Beano, Ronald B. Madison, Zung-An Lu, and Umesh C. Vasisht. (ST) Effects of faying surface treatments, of punching and misalignment of holes, and of the tightening by one turn of the nut upon slip and efficiency of structural joints assembled with high tensile bolts are examined.

**1974. Installation and Tightening of High-Strength Bolts**, by E. F. Ball and J. J. Higgins. (ST) Procedures used to insure that high-strength bolts are tightened to produce the minimum bolt tension required by specifications are described and studies developing a practical method of bolt tightening are outlined.

**1975. Experience with High-Strength Bolts in the Mackinac Bridge**, by John W. Kinney. (ST) The particular applications of bolted connections and the procedures for bolting and inspection as developed on the project are outlined.

**1976. Generalities of Coastal Processes and Protection**, by J. B. Schijf. (WW) The engineering basis of coastal protection is reviewed with emphasis on the Dutch seacoast. The paper supports a shift from protection by groins and seawalls to protection by sandfill.



**1977. Tidal Computations in Coastal Areas, by J. J. Dronkers. (WW)** Computation of tidal motion in shallow coastal waters by the harmonic method is presented. Propagation of the tide in Tampa Bay on the coast of Florida is examined.

**1978. Hydraulic Investigations for the Delta Project, by H. A. Ferguson. (WW)** Field observations, office computations, and model studies made of the Delta protection and reclamation project under construction as of 1958 in the Netherlands are described.

**1979. Model Study of a Hydraulic Breakwater over a Reef, by C. M. Snyder. (WW)** Model test results of a combination hydraulic breakwater and submerged breakwater (reef type) are given. Experimental relationships among reef size, jet discharge and wave characteristics are presented.

**1980. Sand By-Passing Plant at Lake Worth Inlet, Florida, by Charles Senour and John R. Bardes. (WW)** Beach erosion in the vicinity of Palm Beach, Florida, is examined with reference to beach starvation, downdrift of the Lake Worth Inlet, and means adopted for its amelioration. A description of a plant for sand by-passing by means of a submerged pipeline is given.

**1981. Oil Loading Terminal, Pakning, Sumatra, by Barnett Silveston. (WW)** This paper describes the wharf and pipeline construction, including the energy-absorbing fender system, and the means employed to protect steel in the structure against corrosion.

**1982. Water Forces on Accelerated Cylinders, by A. D. K. Laird, C. A. Johnson, and R. W. Walker. (WW)** For single horizontal cylinders the drag coefficients during acceleration agreed with uniform motion values, but deviations occurred during deceleration. The acceleration modulus did not correlate the resistance coefficients near boundary layer

transitions. A leading parallel cylinder reduced the mean resistance but caused some violent force fluctuations.

**1983. "Tidal" Navigational Problems Below Wilson Dam, by Rex A. Elder. (WW)** Entrance conditions at the mouth of the canal leading to the lock facilities were studied on a 1:100 undistorted model. Special entrance structures were developed alleviating adverse navigational conditions caused by the daily fluctuations in turbine discharge together with the steady flow from the plant and spillway.

**1984. The Hydrology of Urban Runoff, by A. L. Tholin and Clint J. Keifer. (SA)** A study of rainfall-runoff relationships in urban areas based upon a design storm on different types of uniform land use is presented. Design graphs and the effects of variations in areal distribution of rainfall are given.

**1985. Discussion of Proceedings Paper 1337, 1592, 1777, 1780, 1782, 1850. (SA)** W. W. Towne and W. H. Davis closure to 1337. Eugene A. Hardin closure to 1592. Howard M. Turner on 1777. M. B. McPherson, Harold E. Babbitt on 1780. Herbert Moore on 1782. Russell H. Babcock on 1850.

**1986. Discussion of Proceedings Paper 1359, 1497, 1499, 1501, 1507, 1589, 1754. (IR)** David B. Willets and Charles A. McCullough closure to 1359. Harvey O. Banks closure to 1497. Earl Harbeck, Jr., closure to 1499. Samuel B. Morris closure to 1501. Wayne D. Criddle closure to 1507. R. S. Willson closure to 1589. Douglas R. Woodward, Alfred R. Golze, Donald McCord Baker on 1754.

**1987. Discussion of Proceedings Paper 1569, 1571, 1644, 1770, 1772, 1789. (WW)** Russell A. Dille closure to 1569. Basil W. Wilson corrections to discussion of 1571. P. Bruun and F. Gerritsen closure to 1644. Woodland Gray Shockley, Raymond A. Wheeler, F. K. Morris, Jos. Millecam, James Kip Finch, J. W. Leslie,



P. A. Blanquet, R. L. Bostian, Jr., Tsung Lien Chow, W. E. Potter, Arthur B. Cleaves on 1770. Shu Tien Li on 1772. Robert E. Hickson on 1709.

**1988. Discussion of Proceedings Paper 1320, 1560, 1630, 1695, 1707, 1708, 1709, 1710, 1711, 1712, 1722, 1865. (ST)** Eric L. Erickson and Neil Van Eenam closure to 1320. Kurt H. Gerstle closure to 1560. Frederick H. McDonald no closure notice to 1630. Emilio Rosenblueth, M. J. Murphy and R. I. Skinner and K. M. Adams, R. W. Binder on 1695. C. Scruton on 1707. Herbert S. Safir, W. R. Schriever, Donald C. Bunting, R. C. Gentry, A. G. Davenport, Henri Perrin, C. Scruton on 1708. C. Scruton, Henri Perrin on 1709. C. Scruton, Henri Perrin on 1710. C. Scruton, Henri Perrin on 1711. C. Scruton on 1712. Alexander Dodge corrections to discussion of 1722. Tung Au on 1865.

**1989. Discussion of Proceedings Paper 1453, 1530, 1588, 1808, 1809, 1833. (HY).** Carl E. Kindsvater and Rolland W. Carter closure to 1453. Emmett M. Laursen closure to 1530. M. B. McPherson and J. V. Radziul closure to 1588. Ven Te Chow, J. L. H. Paulhus on 1808. Ven Te Chow on 1809. Turgut Sarpkaya on 1833.

## APRIL

**Journals:** Engineering Mechanics, Highway, Soil Mechanics and Foundations, Structural, Power, Hydraulics.

**1990. Columns Under Combined Bending and Thrust, by Theodore V. Galambos and Robert L. Ketter. (EM)** In this paper interaction curves relating critical combination of axial thrust, end-bending moment and slenderness-ratio are developed for pin-ended wide-flange beam-columns which are bent about their major axis.

**1991. Seepage Losses From Irrigation Canals, by H. Y. Hammad. (EM)** This paper deals with the two-dimensional

problem of steady seepage flow under gravity from a canal into a semi-pervious clay layer of finite thickness underlain by a freely permeable layer of sand and gravel in which the piezometric head is very near the canal water level.

**1992. Torque-Loaded Continuous Beams of Profile Section, by D. H. Young and J. F. Brahtz. (EM)** A formula is given which simplifies the analysis of torsional behavior of a continuous beam subjected to eccentrically applied transverse loads. Its application is illustrated and an experimental study is described.

**1993. Operational Aspects of Controlled Access Facilities, by J. E. Havenner. (HW)** Operational aspects of extensive mileage of controlled access highways demanding new concepts and techniques in the field of highway administration are presented.

**1994. Channel-Slope Factor in Flood-Frequency Analysis, by Manual A. Benson (HY)** Annual flood peaks in New England have been related to hydrologic factors, main channel-slope and drainage-area size. The slope for part of the main channel between 85 and 10 percent of the total distance above the gaging point provides the best correlation with flood magnitudes.

**1995. Storm Water in the Chicago Area, by Horace P. Ramey. (HY)** This paper presents a study of past and recent flood conditions in the Chicago area and some recommendations for their improvement.

**1996. Hydraulic Analysis of Surge Tanks by Digital Computer, by Nicholas Barbarossa. (HY)** Bases of analyses, machine computation, are presented to demonstrate how surge problems have been solved in 1-1½ hours by an IBM 650 computer.

**1997. Two Methods to Compute Water Surface Profiles, by Joe M. Lara and Kenneth B. Schroeder. (HY)** Two methods are presented for the computation of

water surface profiles used in the development of tail water rating curves and backwater profiles. Examples of each are included.

**1998. Physico-Chemical Properties of Soils: Clay Minerals**, by R. E. Grim. (SM) Modern concepts of the structure, composition and origin of clay minerals and current procedures for their identification are reviewed.

**1999. Physico-Chemical Properties of Soils: Ion Exchange Phenomena**, by A. W. Taylor. (SM) The origin of various types of electrical charges carried by soil colloids are described and the influence of different species of exchangeable cations on the forces arising from the electrical fields due to these charges is examined in terms of the theory of the diffuse double layer.

**2000. Physico-Chemical Properties of Soils: Soil-Water Systems**, by I. Th. Rosenquist. (SM) A part of the water in a clay-water system should be considered as belonging to the mineral phase. Typical clay properties are analyzed in terms of this concept.

**2001. Physico-Chemical Properties of Soils: Role of Soil Technology**, by T. William Lambe. (SM) This paper first defines and describes the applied science called "soil technology." The contributions that soil technology makes to soil engineering are presented. Some of the future developments in soil knowledge which can be expected are then reviewed.

**2002. Theory and Research in Concrete Shell Design**, by A. M. Haas. (ST) The design of shells by the classical theory is briefly reviewed to serve as a basis for presenting simplifications in design calculations.

**2003. Matric Analysis of Statically Indeterminate Trusses**, by Chu-kia Wang. (ST) The use of matric notations for the analysis of statically indeterminate trusses is presented.

**2004. Short Flexible Suspension Bridges for Heavy Trucks**, by Sven Olof Asplund. (ST) Temporary flexible suspension bridges needed during construction of Swedish hydroelectric power plants to carry heavy trucks are described.

**2005. The Plastic Method of Designing Steel Structures**, by John Fleetwood Baker. (ST) In England the abortive attempt of the Steel Structures Research Committee in 1936 to produce an acceptable rational elastic method of design led to the consideration of the behavior of structures in the plastic range. The development of the plastic method of design is described.

**2006. Engineering Aspects of Santa Susana Nuclear Power Station**, by Dallas I. Downs, George E. Deegan and Robert F. Boggus. (PO) A description of a sodium-cooled reactor with associated power plant near Los Angeles, including construction details; reactor design; radiation shielding fuel and waste handling; water treatment; and coolant problems is given.

**2007. Discussion of Proceedings Paper 1627, 1799.** (HW) G. M. Webb closure to 1627. Bengt F. Friberg on 1799.

**2008. Discussion of Proceedings Paper 1292, 1581, 1604, 1897, 1898.** (EM) I. K. Silverman closure to 1292, P. P. Biljaard on 1581. A. Hrennikoff closure to 1604. Wen Liang Chen on 1897. Turgut Sarpkaya on 1898.

**2009. Discussion of Proceedings Paper 1633, 1815, 1838, 1909, 1914.** (ST) Committee closure to 1633. Dronnadula V. Reddy on 1815. Emilio Rosenblueth on 1838. Kwang-Han Chu on 1909. D. Y. Fok and Tung Au corrections to 1914.

**2010. Discussion of Proceedings Paper 1998, 1999, 2000.** (SM) Paul F. Kerr on 1998. Philip F. Low on 1999. Alan S. Michaels on 2000.

**2011. Discussion of Proceedings Paper 1289, 1535, 1546, 1547, 1548, 1552, 1645, 1648, 1649, 1728, 1729, 1824, 1826. (SM)** C. R. Kolb and W. G. Shockey closure to 1289. Roy D. Gaul closure to 1535. Glebe A. Kravetz closure to 1546. Alexander Kline and Milos Polivka closure to 1547. Judson P. Elston closure to 1548. George K. Leonard and Leland F. Grant closure to 1552. H. B. Seed, R. L. McNeill and J. DeGuenin closure to 1645. A. B. Cleaves closure to 1648. A. B. Reeves closure to 1649. R. W. Spencer, P. J. West, J. H. Birman, B. R. Laverty on 1728. Clark W. Fenske on 1729. G. S. Sarkaria and N. L. Worth on 1824. John A. Focht, Jr., Bernt Jakobson, R. G. Ahlvin, Paul A. Parisi on 1826.

**2012. Discussion of Proceedings Paper 1450, 1807, 1808, 1809, 1811. (HY)** M. R. Carstens closure to 1450. Fred W. Blaisdell and Harold W. Humphreys on 1807. Max A. Kohler on 1808. Erhard E. Dittbrenner, V. M. Yevdjovich on 1809. B. W. Gould on 1811.

**2013. Discussion of Proceedings Paper 1733, 1734, 1735, 1736, 1737, 1738, 1739, 1741, 1742, 1743, 1744, 1745, 1746, 1747, 1748. (PO)** F. L. Lawton on 1733. F. L. Lawton, Huai-yun Hsu, Reijo Ito on 1734. F. L. Lawton on 1735. F. L. Lawton on 1736. Carlos Tercero, Geoffrey Davey, Masatoshi Kawase, Tatsuo Mizukoshi, F. L. Lawton on 1737. F. L. Lawton on 1738. F. L. Lawton on 1739. S. Sakurai on 1741. F. L. Lawton, Waldo G. Bowman on 1742. Torald Mundal on 1743. F. L. Lawton on 1744. J. B. Cooke, F. L. Lawton on 1745. G. I. Davey on 1746. J. B. Cooke on 1747. F. L. Lawton on 1748.

### MAY

Journals: Air Transport, Hydraulics, Pipeline, Professional Practice, Sanitary Engineering Structural.

**2014. New Air Terminal For Columbus, Ohio, by G. E. Taylor, Jr. (AT)** The new terminal for Columbus, Ohio was dedicated on September 21, 1958. This

paper describes some features, and the criteria used in its design.

**2015. Special Pavement Requirements for Jet Aircraft Operations by Belmon U. Duvall. (AT)** The exhaust heat and blast factors in the ground operations of modern jet aircraft applicable to both commercial and military (U. S. Air Force) categories are described.

**2016. Pavement Design for Commercial Jet Aircraft, by F. M. Mellinger, R. G. Ahlvin and P. F. Carlton. (AT)** Pavement requirements are given in the form of Design Charts for both rigid and flexible pavements. The design curves cover a range of loadings for the Boeing 707, the Douglas DC-8, and Convair 880 Commercial Jet Aircraft.

**2017. Hydrology of Lake Ontario, by F. I. Morton and H. B. Rosenberg. (HY)** This paper presents an analysis of the various components making up the water supplies to Lake Ontario. The effects of natural water storage, precipitation, temperature and topography on the components are examined.

**2018. Resistance Experiments in a Triangular Channel, by Ralph W. Powell and Chesley J. Posey. (HY)** A 400-ft adjustable slope triangular flume was tested smooth and also roughened with small rectangular battens at various spacings. A comparison is made of Mannings's formula with some more recent suggestions.

**2019. Model-Prototype Study of a Plumbing Drainage System, by D. A. Gyrog, F. M. Dawson and E. C. Lundquist. (HY)** This paper describes how dimensionless groups of variables may be used to express the performance of a plumbing drainage system. Data obtained from tests on a scale model were correlated with those from the prototype in terms of the dimensionless parameters developed.

**2020. Resistance Properties of Sediment-Laden Streams, by Vito A. Vanoni**

and George N. Nomicos. (HY) This paper presents the results of experiments made to determine the relative effects for the flow friction factor of the suspended sediment load and the configurations which form on sand beds of streams.

**2021. Gravel Blanket Required To Prevent Wave Erosion, by Enos J. Carlson. (HY)** Surface wave erosion tests were performed in a hydraulic wave flume on materials shipped from Yakima Project, Washington. The tests were made to determine the cover blanket needed to prevent leaching of fine base material.

**2022. Hydraulic Models of the St. Lawrence Power Project, by J. B. Byrce. (HY)** Hydraulic models were used extensively in the design of many hydraulic features of the St. Lawrence Power Project and in the development of a plan for controlling the river during construction. A description is given of the project and the models, and some of the more important findings are discussed.

**2023. Engineer-Geologist Team Investigates Subsidence, by M. J. Shelton and L. B. James. (PL)** Large areas within the San Joaquin Valley of California are subject to land subsidence which seriously affects the route location and design of aqueducts. This paper describes methods developed to study the nature of subsidence.

**2024. Federal-Aid Highways and Public Utilities, by G. M. Williams. (PL)** Federal legislation controlling participation with Federal-aid highway funds in costs of adjustments in public utility installations made necessary by highway developments is cited.

**2025. Regulation of Pipeline Design and Construction, Progress Report of the Task Committee on Investigation of Problems Involved in Regulation of Pipeline Design and Construction. (PL)** Pipeline design and construction is regulated in varying degree by Federal Agencies, State Bodies, and other minor governmental subdivisions. Applicable codes,

and administrative orders are presented in this paper. Although presented as a complete compilation, the probable existence of additional pertinent regulations is recognized.

**2026. Ethical Aspects of Engineer Recruitment, by William G. Benko. (PP)** This paper contrasts present day recruiting practices with the intense aggressive recruiting of a few years ago, illustrates the effect of unethical practices, and acknowledges the graduating engineer's part in these practices.

**2027. Humanity Faces A Technological Culture, by Mario G. Salvadori. (PP)** An account of the rate of cultural change in the world today and the psychological and human difficulties encountered by mankind as a consequence is given.

**2028. The Importance of Balance in Engineering Education, by John B. Wilber. (PP)** This paper presents various aspects of educational problems encountered by student engineers. It presents a view opposite to that presented by L. E. Grinter in Proc. Paper 1871 (Dec. 1958).

**2029. Problems of County and Municipal Engineers in Civil Service, by Jean L. Vincenz. (PP)** The benefits to engineers employed in civil service are reviewed. Continuing salary studies, reasonably frequent classification adjustments, and promotional advantages, together with fringe benefits covering adequate retirement, vacation, and sick leave systems help compensate for the higher salaries in private industry.

**2030. Water Quality Problems in the Columbia Basin, by Herbert C. Clare. (SA)** This paper reviews maintenance problems of high water quality throughout the Columbia River Basin. As the economy matures, the preventive pollution control program of the area becomes increasingly important.

**2031. SED Research Report No. 22: An Evaluation of Two Recent Industrial Waste Processes by the Industrial Wastes Section of SED Research Committee.**

(SA) This paper is based on the data from two pilot plant studies on industrial waste treatment by recovery methods. The process for the recovery of waste pickle liquor, and atomized suspension technique, for an effective evaporation, drying, and chemical treatment sequence are reviewed.

**2032. Radioactive Contaminant Removal from Waste Water: Engineering Design Features, by Mark C. Culbreath.** (SA) The first of two papers relating to the design and operation of a plant at Oak Ridge National Laboratory on the collection, treatment, and disposal of large volume (0.5-0.7 mgd), low-level radioactive liquid waste.

**2033. Radioactive Contaminant Removal from Waste Water: Evaluation of Performance, by K. F. Cowser and Roy J. Morton.** (SA) The second of two papers relating to the design and operation of a plant at Oak Ridge National Laboratory for the collection, treatment and disposal of large volume (0.5-0.7 MVD), low level radioactive liquid waste. The paper covers the performance of the lime-soda softening process treatment plant and shows that it is an effective and economical method for the removal of strontium and other materials.

**2034. Effects of Research on Modern American Structural Concrete Design, by Eivind Hognestad.** (ST) The organization and the nature of recent structural concrete research in the United States is outlined.

**2035. Design Table for Steel Columns With Eccentric Loads, by Richard Hugh Bigelow.** (ST) This paper presents a table of bending factors for the design of eccentrically loaded steel columns with an explanation of their derivation. The factors presented differ from those of the A.I.S.C. Manual in that they allow a more precise calculation of the equivalent concentric load.

**2036. Load Distribution of Diaphragms in I-Beam Bridges, by Benjamin C. F. Wei.** (ST) An analytical study of the

effects of diaphragms in I-beam bridges is presented. Several variables are investigated; including (1) relative stiffness of diaphragm, (2) position of diaphragms, (3) relative stiffness of beams, (4) relative dimensions of bridge, and (5) type and position of loading.

**2037. Analysis of Two-Column Symmetrical Bents, by B. R. Cooke.** (ST) A method utilizing cantilever moment distribution, symmetry, and antisymmetry for the direct solution of many symmetrical two-column structures with loads between joints is presented.

**2038. Thermal Electric Pipeline for High-Viscosity Fuel, by A. G. Purdue.** (PL) The use of vacuum still bottoms as primary energy source in a thermal generating station is described, with emphasis upon the method of pipeline transportation.

**2039. Existing Policies Relative to Pipeline Location Progress Report of the Committee on Pipeline Location of the Pipeline Division.** (PL) This report is a summary of answers to a series of eight questionnaires sent to about 100 pipeline companies regarding their pipeline location policies. These queries covered the subjects of road and other crossings, loop line spacing, population density, depth of cover, underground mineral deposits, and swamps.

**2040. Discussion of Proceedings Paper 1325, 1480.** (AT) S. Russell Stearns closure to 1325. George W. Leslie on 1480.

**2041. Discussion of Proceedings Paper 1667.** (PL) R. F. Bukacek closure to 1667.

**2042. Discussion of Proceedings Paper 1486, 1870, 1871, 1872.** (PP) Committee closure to 1486 V. L. Strieter on 1870. V. L. Strieter on 1871. F. C. Lindvall, L. E. Grenler on 1872.

**2043. Discussion of Proceedings Paper 1631, 1772, 1816, 1819, 1820, 1821, 1838, 1854, 1867.** (ST) Robert A. Williamson of 1631. Alexander Dodge corrections to



discussion of 1722. D. C. Gazis closure to 1722. Perng-Fei Gou on 1816 Ming L. Pei 1819. Perng-Fei Gou on 1820. Vitelmo Bertero on 1821. L. Cezek, Milos Volicek on 1838. James S. Hoffman on 1854. R. W. Clough on 1867.

**2044. Discussion of Proceedings Paper 1715, 1777, 1780, 1847, 1852. (SA)** Harrison A. Martin closure to 1715. Thomas M. Stetson on 1777. Shu-t'ien Li on 1780. M. B. McPherson corrections to discussion of 1780. G. E. Walker, Bernd H. Dieterich on 1847. Philip H. Perkins on 1852.

**2045. Discussion of Proceedings Paper 1585, 1662, 1833, 1834. (HY)** Max A. Kohler closure to 1585. Tate Dalrymple closure to 1662. I. Alterman, N. Hamlin on 1833. H. C. Riggs on 1834.

**2046. Committee on Engineers in Public Practice, by M. J. Shelton. (PP)** The Committee, constituted by Board action in October, 1957, participated at its first Convention Session at Los Angeles in February. A resume was given as to the aims and objectives of the Committee followed by a talk on the actions to date and problems.

**2047. Problems of Civil Engineers in State Civil Service, Robert D. Gray. (PP)** One special problem of engineers' salaries in civil service is the automatic increase. This paper studies the problem and advances a possible solution.

## JUNE

*Journals:* City Planning, Hydraulics, Irrigation, Power, Soil Mechanics, Waterways, Structural Engineering.

**2048. Urban Expressways: Joint Planning of Transportation and Land Use, by Roger L. Creighton. (CP)** Transportation systems and the activities of persons on land are both parts of human activity in cities. Joint planning is therefore essential, and a procedure for the

joint planning of transportation and land use is described.

**2049. Cooperative Planning Urban Expressways: The Highway Engineer and the City Planner, by John S. Tsaguris. (CP)** This paper emphasizes the need for closer cooperation between highway engineers and city planners regarding the general character, extent and location of highway facilities through or near urban areas.

**2050. Cooperative Planning for Urban Expressways, by Fred W. Tuemmler. (CP)** It is proposed that highway and planning agencies establish a joint policy of continuous collaboration settling disagreements at staff level not in newspapers, accelerate urban planning programs in fringe areas to meet highway planning deadlines, and invoke acquisition of development rights.

**2051. Professional Registration of City Planners: Growth of City Planning, (CP)** This paper calls attention to the rapid growth of city planning and the need to insure that work to qualified professional planners. State registration is urged to give this protection to the public.

**2052. Professional Registration of City Planners: State Registration Laws by Paul H. Robbins (CP)** State registration laws are justified only when need is shown for protection of the public welfare. To justify registration, city planners have to identify the work done, establish the qualifications of this work and protect the public from the dangerous practices of those not qualified.

**2053. Professional Registration of City Planners: Foundations for Registration, by William H. Larkin. (CP)** City planners, to be recognized as a separate professional group, must base their claim upon a foundation of adequate education as well as professional experience. The initiative in registration must come from the city planners themselves.



**2054. Professional Registration for City Planners: Advantages of Registration**, by E. Lawrence Chandler. (CP) The seeming advantages of requiring legal registration of professional planners as a measure for protecting the public interest is recognized and some of the difficulties in such a program are presented.

**2055. Freeways in Urban Planning**, by Harold M. Lewis. (CP) The history and development of freeways as elements in urban and metropolitan plans will be reviewed in this paper. Coordinated transportation plans are suggested as urgent problems for the immediate future.

**2056. Ground-Water Problems in New York and New England**, by Joseph E. Upson. (HY) Ground-water problems in New York and New England require a close evaluation of the occurrence and quality of water in the aquifers, an advanced knowledge of the hydraulics of ground-water movement, and the interrelationships of stream regimens.

**2057. Pressure Changes at Open Junctions**, by William M. Sangster, Horace W. Wood, Ernest T. Smerdon, and Herbert G. Bossy. (HY) This paper contains the results of an analytical and experimental investigation of the effects of open junctions on the magnitude of pressure changes in closed conduits flowing full.

**2058. Floods of the Florida Everglades**, by Edwin W. Eden, Jr. (HY) Large areas in central and southern Florida are subject to seasonal flooding. This paper examines floods in the Everglades area and the efforts involved in control.

**2059. Economic Evaluation of Water** by P. H. McGauhey and Harry Erlich. (IR) In this paper the problem of allocating unappropriated water to beneficial uses and thereby creating a greater economic yield, is studied.

**2060. Meteoric vs. Nonmeteoric Water**, by H. E. Thomas and D. E. White. (IR) As the demand has increased for surface water and ground water that is replenished by the hydrologic cycle, the possibilities of developing potable non-meteoritic water supplies has arisen. However, research indicates practically all juvenile water is too highly mineralized for most uses.

**2061. High-Lift Construction Methods for Mass Concrete**, by Otto Holden. (PO) The high-lift method of concrete placement has been applied successfully by Ontario Hydro since 1930 to a series of structures ranging in height to a maximum of 240 feet. All evidence indicates that dangerous cracking is unlikely in these structures.

**2062. Tractive Resistance of Cohesive Channels**, by Irving S. Dunn. (SM) A method of estimating the tractive resistance of cohesive channel beds is proposed. The method is based on information obtained from simple soil tests (Atterberg Limits, Particle Size Analysis, Vane Borer Tests).

**2063. Measurement of the Permeability of the Axially Anisotropic Soil**, by Marinus Maasland and Don Kirkham. (SM) The effect on piezometer measurements of an anisotropy in the horizontal plane is analyzed. Such an anisotropy does not significantly affect the numerical value of the shape factor of the piezometer cavity.

**2064. Analysis of Concrete Slabs on Ground**, by G. A. Leonards and M. E. Harr. (SM) A new theory is developed for calculating the stresses and deflections in concrete slabs of finite size supported on ground. The theory accounts for weight, superimposed loads, and warping due to temperature and moisture gradients.

**2065. Analysis of Haunched Octagonal Girder Space Frames**, by Edward Y. W. Tsui. (ST) An analytical procedure for the evaluation of stresses in haunched

octagonal girder space frames is presented. The procedure is established, through generalization of the slope-deflection method.

**2066. Sand Bypassing at Santa Barbara, California, by R. L. Wiegel. (WW)** A breaker constructed at Santa Barbara, California interrupted the littoral drift of sand. Although costly, and not always satisfactory in all details, a method of dredging was developed to combat this function.

**2067. The Effect of Seiches at Conneaut Harbor, by Ira A. Hunt and Leonas Bajorunas. (WW)** Conneaut Harbor has a record of unusually frequent accidents. This paper analyzes seiches on Lake Erie and shows the correlation between water level fluctuation recorded at Buffalo and the accidents at Conneaut.

**2068. Subsidence Problem in Long Beach Harbor District, by R. F. Berbow. (WW)** Subsidence of the ground surface due to oil extraction has set a new record at Terminal Island, California. The history of this subsidence is given through studies determining casual factors, resultant problems and solutions.

**2069. County Flood Control and Water Conservation, by Colonel C. T. Newton and Harold E. Hedger. (WW)** The extensive Los Angeles metropolis situated on a narrow and arid coastal belt receives occasional storms of high intensity. Problems of construction have been complicated due to the topography and heavy urban development.

**2070. Littoral Drift in Vicinity of Charleston Harbor, by James Neiheisel. (WW)** An integrated method employing wave refraction and sediment analysis is suggested as an approach to the interpretation of littoral drift characteristics fundamental to coastal engineering problems.

**2071. Model Study of Mooring Forces of Docked Ship, by R. L. Wiegel, R. A.**

**Dilley and J. B. Williams. (WW)** Laboratory data are presented on the forces induced by water gravity waves in the camels and lines of a Liberty Ship moored alongside a dock for waves up to five feet in height and with periods up to one hundred and twenty seconds. (prototype dimensions).

**2072. Discussion of Proceedings Paper 1877. (CP)** John H. Matthews, John Alexander Logan on 1877.

**2073. Discussion of Proceedings Paper 1754, 1965. (IR)** Robert O. Thomas closure to 1754. Raphael G. Kazmann on 1965.

**2074. Discussion of Proceedings Paper 1672, 1675, 1683, 1864, 1946. (PO)** Arthur P. Geuss closure to 1672. P. L. Ailken corrections to discussion of 1675. L. A. Schmidt, Jr. closure to 1683. F. L. Lawton on 1846. R. T. Richards on 1946.

**2075. Discussion of Proceedings Paper 1509, 1696, 1865, 1867, 1878, 1879, 1909, 1914, 1940. (ST)** Panagiotis Moliotis closure to 1509. John E. Rinne on 1696. Frederick Norman Pannell on 1865. A. J. Francis on 1867. Aron Zaslavsky, W. W. L. Chan, Shaukat Miraz, Henry J. Cowan on 1878. Giuliano Augusti, Tullio Renzulli; Emilio Rosenblueth, A. A. Eremin on 1879. Robert F. Warner, Henry J. Cowan, Bela Goschy and George Balazs on 1909. John Sherman on 1914. David D. Brillenbourg Bravo, R. Schjoat on 1940. John A. Sbarounis and Michael P. Gaus corrections to 1940.

**2076. Discussion of Proceedings Paper 1663, 1833, 1834, 1859, 1890, 1997. (HY)** Elliot F. Childs closure to 1663. John B. Herbieh on 1833. Francis T. Schafer on 1834 J. R. Bowman on 1859. Michele Viparelli on 1890. Bernard L. Golding on 1997.

**2077. Discussion of Proceedings Paper 1545, 1549, 1731, 1732, 1824, 1826, 1863,**

1937. (SM) Stanley J. Johnson closure to 1545. Fred H. Lippold closure to 1549. Thomas B. Kennedy closure to 1731. T. Cameron Kenney on 1732. Marcel Bitown on 1824. R. F. Legget on 1826. John A. Focht Jr., R. G. Brickell and A. W. Smith on 1863. T. Cameron Kenney, E. J. Zagarra on 1937.

2078. Discussion of Proceedings Paper 1571, 1874. (WW) J. T. O'Brien and D. I. Kuchenreuther closure to 1571. Williard M. Snyder on 1874.

### JULY

**Journals:** Air Transport, Engineering Mechanics, Hydraulics, Sanitary Engineering.

2079. An Engineering Appraisal of Hydrologic Data: Progress Report of the Task Group of Hydrologic Data of the Committee on Hydrology of the Hydraulics Division. (HY) A brief chronology is given of studies made since 1936 on the adequacy of hydrologic data.

2080. Ground Water Utilization, Suffolk County, L. I., New York, by J. F. Hoffman. (HY) Water problems that may arise through constantly increasing withdrawals include extensive sea water encroachment, marked depletion of storage, industrial contamination, and rises in water temperatures.

2081. Design Methods for Flow in Rough Conduits, by Henry M. Morris. (HY) Design curves and methods are presented for determining friction factors for turbulent flow in closed conduits and tranquil open channel flow.

2082. Ground Water Flow in the Netherlands Coastal Dunes, by David K. Todd, and L. Huisman. (HY) Ground water distribution and flow in part of the Netherlands coastal dunes are analyzed mathematically.

2083. A Time Interval Distribution for Excessive Rainfall, by H. C. S. Thom.

(HY) Although recurrence intervals are of primary interest in frequency analysis of excessive precipitation, present methods average these intervals and thus conceal much design information.

2084. Determination of Hydrologic Frequency Factor, by Ven Te Chow. (HY) A graphical method for the determination of the frequency factor in a log-normal distribution of hydrologic data is described. The graphical procedure is simpler than the analytical method and it produces results with less effort.

2085. Roll Waves and Slug Flows in Inclined Open Channels, by Paul G. Mayer. (HY) Roll waves and slug flows, two distinctly different wave patterns, are studied phenomenologically in an inclined open channel.

2086. Pilot Plants for Water Treatment Research, by Gordon G. Robeck and Richard L. Woodward. (SA) The paper outlines the facilities of pilot plants at the Robert A. Taft Engineering Center and reviews the present and proposed studies.

2087. Sludge Treatment and Disposal by the Zimmerman Process, by the Sewage Treatment Section of SED Research Committee. (SA) The data recently published, give the results of a pilot plant study of the Zimmerman Process for destroying organic sludge solids.

2088. Dust Properties and Dust Collection, by B. Gutterman and W. E. Ranz. (SA) Basic research of the physical properties of dust in suspensions and dust layers related to dust collection has resulted in the development of analytical methods which permit calculation of re-entrainment and backmixing characteristics.

2089. A 7-Mile Digested Sludge Outfall, by Norman B. Hume, Robert D. Bargman, Charles G. Gunnerson and Charles E. Imel. (SA) Engineering and oceanographic factors which established the design and construction criteria for

Los Angeles' digested sludge outfall are reviewed.

**2090. Absorption of Oxygen From Air Bubbles in Water, by W. Wesley Eckenfelder, Jr. (SA)** Several correlations have been developed to define the absorption of oxygen from gas bubbles in water. This paper develops relationships between the liquid film coefficient,  $K_L$  and the Reynolds and Schmidt Numbers at liquid submergence depths up to 15 ft. Correlations are also developed relating the overall coefficient,  $K_{La}$ , to pertinent process variables.

**2091. Commentary on Plastic Design in Steel: Basic Concepts. Progress Report No. 1 of the Joint WRC-ASCE Committee on Plasticity Related to Design. (EM)** This paper is the first of a series issued by the Committee. It documents the applicability of plastic analysis to design of structural steel beams and frames.

**2092. Commentary on Plastic Design in Steel: General Provision and Experimental Verification. Progress Report No. 2 of the Committee on Plasticity Related to Design. (EM)** This paper is the second in a series of reports on plastic design emanating from the Committee. Some of the basic considerations that should be satisfied in establishing a plastic design procedure are presented. Provisions are suggested for such questions as types of construction, material properties, and the load factor.

**2093. Stratified Flow into a Line Sink, by Walter R. Debler. (EM)** The discharge of a stratified fluid (with a stable linear density variation at infinity) through a horizontal slot at the end of a channel has been experimentally investigated. The experiments show that when the densimetric Froude number is less than 0.28 the flow pattern is divided into two horizontal regions.

**2094. A Method of Computation for Structural Dynamics, by Nathan A. Newmark. (EM)** This paper describes a general procedure for the solution of prob-

lems in structural dynamics. The method can be applied to structures of any degree of complication, with any relationship between force and displacement ranging from linear elastic behavior through various degrees of inelastic behavior or plastic response, up to failure.

**2095. Ultimate Strength Criteria for Reinforced Concrete, by Ladislav B. Kriz. (EM)** Criteria for ultimate strength of structural members are derived by determining analytically the value of extreme compression edge strain which results in maximum moment or load.

**2096. Shrinkage, Swelling and Creep in Cement, by A. Hrennikoff. (EM)** Study of the shrinkage-swelling phenomena in cement leads to enunciation of the active water theory described in the paper.

**2097. Discussion of Proceedings Paper 1582, 1901, 1935, 1962. (HY)** Martin E. Nelson and Harvey J. Johnson, closure to 1582. J. R. Bocoman on 1901. E. Pariset and B. Michel on 1935. Peter Ackers on 1962.

**2098. Discussion of Proceedings Papers 1678, 1717, 1848, 1852, 1854, 1930, 1984. (SA)** Committee closure to 1678. J. F. Laboon closure to 1717. Nadavia Bethlahmy closure to 1848. C. A. Gordon closure to 1852. James S. Hoffman correction to discussion of 1854. P. Dejonghe, Pierre Cohen on 1930. L. Tholin and Clint Keifer corrections to 1984.

**2099. Discussion of Proceedings Papers 1792, 1898. (EM)** Theodore R. Higgins, on 1792. Richard E. Mason, Gordon P. Fisher, and George Winter closure to 1792. Enzo Oscar Macagno on 1898.

**2100. A Statement of Objective, by Reginald J. Sutherland. (AT)** This conference is an attempt to draw on the experiences gained in operating the new jet aircraft.

**2101. The Role of the Air Transport Division, by John N. Kyle, Jr. (AT)** The Air Transport Division organized in 1945 functions as a clearing house for information on air transport facilities.

**2102. VTOL-STOL Aircraft Progress Report of the Committee on Air Centers of the Air Transport Division.** (AT) The physical dimensions of the aircraft that will utilize the urban air centers of the future are of major interest to city planners and designers.

**2103. Aircraft of the Future and Ports for Modern Flight Vehicles,** by Charles S. Draper. (AT) Flight vehicles covering the broad spectrum of aeronautical and astronautical types are reviewed.

**2104. Aircraft Fueling Systems for Jets,** by James P. O'Donnell. (AT) This paper considers general design criteria for civil airport fueling systems for pressured fueling of jet aircraft.

**2105. The Pattern of Future Air Travel Demands,** by J. W. Pocock. (AT) There is a need for modernizing primary airports and constructing 3,000 additional secondary airports to accommodate air carrier and general aviation fleet growth anticipated in the next decade.

**2106. Environmental Planning of Future Airports and Air Bases,** by S. Richard Rio. (AT) The flight characteristics of the aircraft of the future will have a direct bearing on the development of the environment of airfields.

**2107. Integrating the Airport into Metropolitan Planning,** by Phillip E. Geissal. (AT) The airport as a unit must be fitted into the urban pattern to best perform its full internal function. Strict zoning will be required for the use of areas affected by jet-age airports.

**2108. Ground Transport of People to and from the Civil Airport,** by Vincent J. Roggeveen and Lawrence V. Hammel. (AT) Ground transportation between large civil airports and the communities, locations of airports within the communities, and travel desires and modes of travel for people going to and from the airport are examined.

**2109. Ground Transportation,** by Robert F. Wall. (AT) The future would indicate that rubber-tired, motorized equip-

ment will play the major role in the mass transportation of passengers.

**2110. Auto Parking for Efficiency and Revenue at Airports,** by Ben E. Nunn. (AT) A study is presented of parking facilities and economics at jet-age airports.

**2111. The Future of Airline Ground Transportation,** by William J. Culbirth, Jr. (AT) The capable ground operator currently operating the surface transportation at our various Airports is a "key" man to the success of the jet age.

**2112. Airport Revenue Bond Financing,** by Walter C. Cleave. (AT) To reduce financing costs and encourage efficient operation, it has been suggested that airports owned by a city or other public body be combined into a single airport system.

**2113. An Operator's Experience in Airport Operations with Jets,** by R. J. Sutherland. (AT) This paper outlines experiences at various airports during the initial four months of operation with Boeing 707-123 model jet air transports.

**2114. Experience in Airport Operations with Jet Aircraft,** by Peter W. Ball. (AT) BOAC has successfully operated Jet and Turbo-Prop Aircraft with little difficulty or inconvenience to others.

**2115. Experiences in Air Terminal Operations with Jet Aircraft,** by Randall W. Kirk. (AT) Air terminal operating experience during the first seven months of Boeing 707 is recounted with specific reference to Idlewild (New York), Le Bourget (Paris), Ciampino (Rome), and London Airport-North (England). Criteria are included for design of the ideal airport terminal.

**2116. Airline Experience in Airport Operation with Jet Aircraft,** by Marci B. Fannon. (AT) One important facet of jet integration concerns interim facilities until planned terminals and facilities become available. Improvements in general airport arrangement—ramp layout, passenger handling facilities, airplane service-



ing and over-all operation—all assist in providing faster, more efficient ground handling, with improved service and comfort for the passenger.

**2117. The Development of Design Criteria for Washington International Airport Terminal Facilities**, by Richard M. Huber. (AT) Design concepts, Progress Report, and special features for aircraft and passenger handling are being incorporated in the New Washington International Airport under construction near Chantilly, Virginia.

**2118. Development of Rigid Pavement Design Criteria for Military Airfields**, by James P. Sale and Ronald L. Hutchinson. (AT) Results of Corps of Engineers' rigid airfield pavement investigations since 1940 are related to the continuing changes in requirements dictated by military aircraft growth and increasingly severe ground operational characteristics. Traffic test data is integrated into usable design and construction criteria.

**2119. Prestressed Concrete Pavements**, by Eric C. Molke. (AT) Deflections and bending moments for beam and slab on elastic foundation are reviewed for the elastic as well as the plastic range. Advantages of working in the plastic range for slab moments confirm the usefulness of prestressing to harmlessly close small haircracks.

**2120. Effects of Jet Fuel Spillage and Blast on Pavements**, by H. J. Lichtefeld. (AT) This paper reviews the problems associated with jet fuel spillage, heat and blast created by the operation of turbine-powered aircraft as related to civil airport pavements. The material is compiled from information obtained from the military, aircraft manufacturers, and aircraft engine manufacturers, as well as from observations at several civil airports.

**2121. Runway Lighting—New York International Airport**, by John P. Veerling. (AT) A description is given of lighting under construction for a new instrument runway.

**2122. Approach and Runway Lighting as Viewed by the Air Line Pilot**, by Har-

old R. Miller. (AT) The experiences of a pilot in making landings in a jet aircraft are presented. The visual aids necessary to the making of a successful landing are described.

**2123. The Airport Operator in the Jet Age**, by E. Thomas Burnard. (AT) Capital financing, master planning, keeping abreast of technological developments in aviation and achieving financial self-sufficiency are among the key problems of airport operators in the Jet Age.

**2124. Runway Lengths for Jet Transports**, by Robert Horonjeff and Richard Coykendall. (AT) Planning of runway lengths requires familiarity with airplane characteristics and performance regulations. Lengths required by a specific aircraft vary considerably. The influence of technical factors significant in determining runway lengths needed by jet transports is illustrated or explained.

**2125. Paris-Orly Airport and its New Terminal Area**, by Henri Vicariot. (AT) The Orly Master Plan results in fewer runways and more space for commercial and industrial areas. A new terminal is under construction, which will provide facilities for international and domestic flights.

## AUGUST

**Journals:** Hydraulics, Power, Soil Mechanics and Foundations.

**2126. Translation of Foreign Literature on Hydraulics: Progress Report of the Task Force on List of Translations of the Committee on Hydromechanics of the Hydraulics Division.** (HY) In 1958, the Committee on Hydromechanics established a Task Force on List of Translations, for the purpose of bringing and keeping the original List of Translations of Foreign Literature on Hydraulics, Manual No. 35, up to date. The first addendum to this manual is presented in this paper.



**2127. Operation of Spillways in Northwest Projects, by R. B. Cochran. (HY)** Large tainter gates have advantages over the vertical-lift type of gates for spillways. Stilling basins of such spillways, which are subject to year round use, should be designed with ample proportions to permit latitude in operation procedures and to minimize maintenance costs.

**2128. Consistency in Unitgraphs, by Bertram S. Barnes. (HY)** This paper undertakes a re-appraisal of certain common assumptions and presents a rapid and positive arithmetical method of deriving unitgraphs from compound hydrographs. An urgent need for more study of lag relationships is demonstrated.

**2129. Spillway Design for Pacific Northwest Projects, by Marvin J. Webster. (PO)** This paper summarizes the design criteria and characteristics for spillways in five Pacific Northwest Projects which include Chief Joseph McNary, The Dalles, Detroit, and Cougar Dams. The spillway crests for Chief Joseph and The Dalles are under-designed to seventy-five percent of the maximum heads. Model studies were used extensively in the design of four of the five spillways described in the paper.

**2130. USBR Practices for Control of Cracking in Arch Dams, by Charles L. Townsend. (PO)** This paper describes the temperature control studies undertaken by the Bureau of Reclamation and the temperature control measures most commonly used to prevent cracking in arch dams.

**2131. The Thomas H. Allen Electric Generating Station, by Peter J. McCoy and Vincent Shamamian. (PO)** This paper reports the civil engineering features and the solution of the related engineering problems resulting from the natural site conditions encountered as well as from those features developed to provide for the operating and building requirements of a modern plant of this capacity.

**2132. Multipurpose Project Powerplant Capacity, by Richard E. Krueger. (PO)** The major factors establishing the size of power plants attached to multipurpose irrigation projects of the Bureau of Reclamation are outlined here. Included are the basic factors to be considered in determining the number of units into which the plant is to be divided.

**2133. Ocean Cooling Water Systems for Two Thermal Plants, by L. T. Mariner and W. A. Hunsucker. (PO)** This paper compares varied problems associated with the design and construction of circulating water facilities for two coastal thermal plants to serve the City of Los Angeles. Widely differing locations pose diverse design problems of sanding, erosion, and navigational requirements.

**2134. Freezing of Slurry Around Piles in Permafrost, by Ronald F. Scott. (SM)** This paper presents an analysis of the problem involved in predicting the time that a slurry will take to freeze in particular conditions. The problem was solved by means of an electronic analog computer, and curves of the solution are presented.

**2135. Compressibility as the Basis for Soil Bearing Value, by B. K. Hough. (SM)** The value and practicability of rupture theory as the chief basis for bearing value determination is questioned. As an alternative it is proposed that contact pressures and footing sizes be selected so as to equalize settlement due to soil compression. Procedures for use in practical applications are proposed.

**2136. Investigation of Underseepage—Mississippi River Levees, by W. J. Turnbull, and C. I. Mansur. (SM)** In this paper, the influence of the geological make-up of the area on underseepage is demonstrated and theoretical aspects of the problem are considered. Piezometers are shown to be a practical field tool in developing data on the underseepage problem.

**2137. Rock Characteristics at the Paulo Afonso Power Plant, by Ernesto Pechler**

and Francisco Barros. (SM) The Paulo Afonso Project on the Rio Sao Francisco is the first underground project in Brazil. Conduit system, power house and discharge are located wholly in rock. A number of tests have been carried out and valuable information about the behavior of the rock was obtained.

**2138. Discussion of Proceedings Paper 1809, 1811, 1902, 1904, 1984, 1997.** (HY) W. B. Langbein closure to 1809. W. B. Langbein closure to 1811. R. E. Hickson on 1902. David H. Miller on 1904. P. O. Wolf on 1984. T. R. Anand on 1997.

**2139. Discussion on Proceedings Paper 1670, 1671, 1675, 1687, 1740, 1747, 1749.** (PO) A. W. F. McQueen, C. N. Simpson and I. W. McCraig closure to 1670. J. Barry Cooke on 1671. C. M. Roberts on 1675. Paul Baumann closure to 1687. F. W. Patterson and D. H. MacDonald closure to 1740. Armondo da Palma Carlos on 1747. J. Barry Cooke on 1749.

**2140. Discussion of Proceedings Paper 1654, 1655, 1727, 1728, 1730, 1826, 1864, 1937.** (SM) T. William Lambe closure to 1654. T. William Lambe closure to 1655. Paul H. Shea and Harry E. Whitsett closure to 1727. K. Terzaghi and T. M. Leps closure to 1728. C. Martin Duke closure to 1730. Peter B. Heidema on 1826. F. L. Lawton on 1864. E. T. Hanrahan on 1937.

## SEPTEMBER

**Journals:** Construction, Highway, Hydraulics, Irrigation and Drainage, Sanitary Engineering, Structural, Surveying and Mapping, Waterways and Harbors, Professional Practice.

**2141. Foundation Installation Requiring Recharging of Ground Water,** by James D. Parsons. (CO) The foundations of the structures described required extensive dewatering and diffusion facilities to be provided for their installation. The diffusion system described is believed to be the first of its type to be employed.

**2142. Ventilated Building Foundations in Greenland,** by Roger H. Williams. (CO) This paper describes the ventilated foundation systems used in permafrost areas in Greenland. Problems of heat transfer, moisture content, ground water conditions, and structural details which affected design are presented.

**2143. Construction of the Columbia River Bridges,** by Ivan D. Merchant. (CO) This paper covers some of the more interesting problems encountered in remodeling a bridge constructed in 1914-15 to provide greater vertical and horizontal clearances for river navigation and in the construction of a new parallel bridge.

**2144. A Plan For a County Motor Vehicle Transportation System,** by Victor W. Sauer. (HW) Contra Costa County, California, has developed a plan for a road network serving present and future needs. As a technical feature, traffic data is coded on a grid system basis, thus facilitating re-use of information.

**2145. Pavement Design Practices in Virginia,** by K. E. Ellison. (HW) Virginia utilizes a modified CRB method for designing highway pavements. The primary and Interstate Systems are divided into 6 classes based on the weight and volume of truck traffic. The secondary system is similarly divided.

**2146. The Electronic Computer in Highway Engineering,** by L. R. Schureman. (HW) This paper describes electronic computers and their functional components; operating techniques; the procedure for their use in the solution of engineering and highway problems.

**2147. Flood Control Aspects of the Cauca Valley Development,** by Phillip Z. Kirpich and Carlos S. Ospina. (HW) The Cauca Valley project applies two techniques relatively new in Latin America: integrated water-resource development and administration by a decentralized, TVA-type agency. These measures for flood-control are presented in this paper.

**2148. Friction Factors in Corrugated Metal Pipe,** by Marvin J. Webster and Laurence R. Metcalf. (HY) A study made to determine friction co-efficients for flow in large corrugated metal pipe and to determine typical distribution of velocities in each test pipe for several discharges is presented in this paper.

**2149. Revised Computation of a Velocity Head Weighted Value,** by Joe M. Lara and Kenneth B. Schroeder. (HY) A revised computational procedure is proposed on the determination of a weighted value of the velocity head. An example of the procedure is illustrated by a hydraulic computation of the discharge of a stream using the slope-area method.

**2150. Eddy Diffusion in Homogeneous Turbulence,** by Gerald T. Orlob. (HY) Taylor's

theory of diffusion by continuous movements and the Einstein equation of diffusion were applied to eddy diffusion of particles in a two dimensional field of homogeneous turbulence produced by broad shallow channel with extreme bottom roughness. Results are reported herein.

**2151. Education for Continuous Irrigation in the Humid Areas**, by Billy B. Bryan. (IR) As educators, irrigation engineers should be familiar with the factors effecting costs, production and consequent net profits. This paper presents an analysis of data concerning these and other factors.

**2152. Discussion of Proceedings Paper 1563**, 1694, 1695, 1709, 1710, 1711, 1712, 1817, 1819, 1838, 1839, 1854, 1878, 1910, 1911, 1913, 1914. (ST) D. F. Moran and J. A. Cheney closure to 1563. Bengt Broms and I. M. Viest closure to 1694. John A. Blume closure to 1695. Glenn B. Woodruff and John J. Kozak closure to 1709. Thomas W. Signell closure to 1710. W. Waters Pagon closure to 1711. F. B. Farquarson closure to 1712. Louis Balog on 1817. Chu-Kia Wang closure to 1819. Lyman C. Wood closure to 1838. R. F. Luxford closure to 1839. James S. Hoffman corrections to 1854. Herbert A. Sawyer, Jr. on 1878. F. T. Mavis on 1910. Ivan M. Melidov on 1911. E. George Stern on 1913. J. J. Polivka on 1914.

**2153. Annual Droughts**, by Marion Clifford Boyer. (IR) The effects of annual droughts are reflected in the growth of tree rings, the formation of varves, records of temperature and precipitation, and the yield of crops. A study of weather records and the yield of corn in Iowa is presented.

**2154. Laboratory Research on Interceptor Drains**, by Jack Keller and A. R. Robinson. (IR) This paper reports the results of a large scale model study concerned with the design of interceptor drains. Relationships are developed for estimating the flow from the drains.

**2155. Developing Storage for Irrigation Water in the Humid Areas of the United States**, by T. H. Quackenbush. (IR) The factors that affect the development of irrigation storage facilities in humid climates are discussed. Also included are modifications in design and planning criteria.

**2156. Aquifer Tests in the Snake River Basalt**, by W. C. Walton and J. W. Stewart. (IR) The results of 11 aquifer tests and specific capacity data for 238 production wells indicate that the coefficient of transmissibility of the Snake River basalt ranges from  $1 \times 10^5$  gpd per foot to  $1.8 \times 10^7$  gpd per foot and averages about  $4 \times 10^6$  gpd per foot.

**2157. Consolidation of Irrigation Companies and Systems**, by A. Alvin Bishop. (IR) The problems of the old irrigation systems diverting

water from a common source are pointed out and recommendations are made concerning consolidation of irrigation companies and systems.

**2158. Drainage in the Coachella Valley of California**, by Lowell O. Weeks. (IR) The program of drainage for the Coachella Valley was based upon salinity content of drainage waters and soils; soils in relationship to the movement of water.

**2159. Progress on Barrier to Sea Water Intrusion**, by A. E. Bruington. (IR) Engineering and geologic exploration and planning proceeds for an 11-mile fresh water barrier to sea water intrusion in a ground water reservoir in Los Angeles County, California.

**2160. Drainage Problems of the San Joaquin Valley**, by William L. Berry and Edward D. Stetson. (IR) This paper outlines the geography and geology of the San Joaquin Valley of California, with special emphasis on the factors affecting drainage. Current drainage problems are unfolded through a description of the cultural changes that have brought them into sharp focus.

**2161. Sewage Sludge Disposal in Westchester County**, by Guy E. Griffin. (SA) The paper discusses the quantity and costs of sewage sludge disposal for several of the Westchester County plants.

**2162. Filter Plant Design**, by Richard Hazen. (SA) The recent design of several filter plants for municipal and industrial purposes has provided opportunity for critical analysis of laboratory data and actual plant performance.

**2163. Stability Considerations in the Design of Steel Columns**, by Charles Massonnet. (ST) Two problems in the field of stability are considered: the behavior and design of steel columns subjected to thrust and unequal end moments; the behavior and design of plate elements liable to buckling.

**2164. Analysis of Curved Girders** by H. H. Fickel. (ST) This paper presents the derivation of influence lines for bending and torsional moments and shears on horizontally curved girders. Solutions are given for simple and continuous spans.

**2165. The Set-Up Error in Horizontal Angles**, by Sumner B. Irish. (SU) The effect of the set-up error on the accuracy of a horizontal angle is determined. Causes of angular error are presented. Graphs are included to facilitate the evaluation of the developed expression.

**2166. Status of Surveying and Mapping in the United States: Final Report of the Task Com-**

mittee on Status of Surveying and Mapping of the Surveying and Mapping Division, by Austin B. Barry. (SU) A classification chart shows the distinction between professional-level and technician-level work, as well as between engineering and non-engineering in surveying-mapping activities.

**2167. Deepening of Wilson Lock Eliminates Third Lockage**, by W. F. Emmons and O. Lavik. (WW) TVA is building a new large single-lift lock at Wilson Dam to replace the present 35-year-old triple-lift lock system. The old system will be utilized for standby service.

**2168. Engineering Aspects of Coastal Sediment Movement**, by Richard Silvester. (WW) Current knowledge of foreshore processes are summarized. The predominant swell in sediment transport and coastal physiography is stressed. Certain conclusions are presented respecting scale models of coastal sediment movement.

**2169. Present State of Coastal Engineering in Japan**, by Kiyoshi Horikawa. (WW) Japanese engineers are striving successfully to improve the status of coastal engineering in Japan. A complete bibliography of Japanese publications on this subject is presented.

**2170. Rincon Offshore Island and Open Causeway**, by John A. Blume and James M. Keith. (WW) This paper presents the design problems and the construction techniques involved in creating a man-made island of sand, rock and precast concrete armor in the Pacific Ocean offshore from California.

**2171. Laboratory Investigation of Rubble-Mound Breakwaters**, by Robert Y. Hudson. (WW) Laboratory tests have been conducted to determine stability characteristics of various armor-unit shapes, and a new stability formula for rubble breakwaters was developed.

**2172. Design of Seawalls and Breakwaters**, by Ira Hunt. (WW) This paper discusses seawall and breakwater design from the standpoint of the manner and effectiveness with which they reflect or dissipate the incident wave energy.

**2173. An Electric Analog Model of a Tidal Estuary**, by H. A. Einstein and James A. Harder. (WW) Five hundred miles of channel in the Delta Region, California, now subject to sea water encroachment, may be protected by salinity barriers and a master levee system. An electric analog model developed at the University of California predicts tidal amplitude and flows resulting from such modifications to the hydraulic system.

**2174. Breakwater at Crescent City, California**, by John E. Deignan. (WW) The outer breakwater at Crescent City, completed in 1957, used tetrapods as the armor stone for the last sec-

tion. This paper reviews the problems created by the use of tetrapods.

**2175. A Breasting Dolphin for Berthing Supertankers**, by John M. Weis and Virgil Blancato. (WW) The design of a flexible dolphin type structure for berthing 100,000 ten supertankers in deep-water locations is presented.

**2176. New York State Barge Canal System**, by Edward C. Hudowalski. (WW) This paper describes the history, the engineering and the economic effects of this Canal System.

**2177. The Supply and Loss of Sand to the Coast**, by J. W. Johnson. (WW) A summary of the various sources of supply and loss of sand to the coast is presented with special application to a reach of the coast of California.

**2178. Discussion of Proceedings Paper 1955, 1956, 1957, 1958, 1959.** (CO) Paul F. Keim, Frank W. Stubbs Jr. and Ellis Danner on 1955. William Hershleier and Henry G. Howard on 1956. Robert F. Borg on 1957. Henry G. Howard on 1958. Theodore B. Appel Jr., Paul F. Keim and Henry G. Howard on 1959.

**2179. Discussion of Proceedings Paper 1963, 1964, 1965.** (IR) N. A. Halkias on 1963. David K. Todd and Jacob Bear on 1964. J. Ernest Flack on 1965.

**2180. Discussion of Proceedings Paper 1626, 1800, 1899, 1900.** (HW) Abdun-Nur closure to 1626. Bengt F. Friberg on 1800. Carlton N. Conner, C. W. Britzius, K. P. Woods, L. S. Blake, H. F. Clemmer, E. J. Kilcawley, Ellis Danner, Maclean & Jones, Springenschmid, V. J. Brown, H. F. Winterkorn, W. R. Thomson on 1899. Ming L. Pei on 1900.

**2181. Discussion of Proceedings Papers 1780, 1847, 1850, 1930, 1984.** (SA) Tsung-Lien Chou closure to 1780. Edward J. Cleary closure to 1847. Sinkoff, Geilker and Rennerfelt closure to 1850. R. H. Burns and L. Carlbon on 1930. M. B. McPherson & M. Joseph Willis, Paul Bock, Carl F. Izzard & Charles Armentrout, Tsung-Lien Chou on 1984.

**2182. Discussion of Proceedings Paper 1807, 1934, 1935, 1960, 1961, 1962, 1996, 1997.** (HY) Warren B. McBirney on 1807. Max A. Kohler on 1934. J. R. Bowman on 1935. P. K. Kandaswamy and Rajaratnam, T. R. anand on 1960. R. Silvester, Ivan M. Nelidov, Walter J. Tudor, Warren W. DeLapp on 1961. K. Szesztay, Henry J. Miles, M. B. McPherson, Nicholas Bilonok, J. V. Dawsey on 1962. Charles Jaeger on 1996. R. Silvester on 1997.

**2183. Discussion of Proceedings Paper 1697, 1842.** (SU) Committee on Highway and Bridge

Surveys closure to 1897. R. Robinson Rowe, Woodland G. Shockley, John A. Focht, Jr., David M. Greer, Ralph F. Reuss, E. J. Zegarra on 1842.

**2184. Discussion of Proceedings Paper 1568, 1770, 1789, 1874, 1976.** (WW) Charles L. Bretschneider closure to 1568. Shu T'ien Li closure to 1770. Ray E. Holmes closure to 1789. David M. Rockwood on 1874. R. Silvester on 1976.

**2185. Discussion of Proceedings Paper 1868, 1869, 1870, 1871, 1872.** (PP) Committee on Engineering, Education, Los Angeles Section on 1868. Henry G. Howard on 1869. Hotten A. Elleby and Frank A. Butrico on 1870. C. J. Posey, John E. Kiker, Jr. and Lee H. Johnson on 1871. Alfred C. Ingersoll and Frederick L. Hotes on 1872.

**2186. Discussion of Proceedings Paper 1707, 1821, 1939, 1942, 1943, 1970, 1974, 2005, 2035.** (ST) J. M. Biggs closure to 1707. R. S. Rowe closure on 1821. L. Cizek on 1939. A. A. Eremin on 1942. J. J. Polivka on 1943. Richard T. Douty on 1970. Alfred Zweig, M. Zar and W. H. Munse on 1974. A. Hrennikoff on 2005. Roy Levy, C. W. Cunningham and James Chinn on 2035.

**2187. Methods of Accomplishing Professional Development,** by N. W. Dougherty. (PP) Professionalism is presented as a way of thinking and living rather than as an accumulation of knowledge and power.

**2188. Report of the Committee on Salaries of the ASCE Department of Conditions of Practice.** (PP) This paper reports in detail the results of the 1959 ASCE survey of Civil Engineers Salaries. Comparisons with the results of the 1957 survey are included.

## OCTOBER

**Journals:** Air Transport, Engineering Mechanics, Hydraulics, Pipelines, Power, Soil Mechanics and Foundations, Structural.

**2189. Longitudinal Distribution of Wheel Loads on a Runway,** by R. W. Smith and R. Horonjeff. (AT) This paper examines existing runways in the light of the jet age, and analyzes the economy factors in runway construction.

**2190. Civil Engineering Features of the Los Angeles International Airport Development,** by Frank A. Grainger. (AT) This paper reviews the history and development of the Los Angeles International Airport. Among the topics touched upon are aircraft ground traffic flow, design stresses for jet airliners and aircraft fueling systems.

**2191. Architectural Planning and Treatment of Airport Problems,** by Donald E. Wilcox. (AT) The paper deals with the project development associated with the airfield improvements and new terminal facilities at Los Angeles International Airport over a period of years, citing some of the planning, design and coordination problems.

**2192. Construction of a Prestressed Concrete Test Pavement,** by Carl F. Renz. (AT) The construction of a full scale prestressed concrete pavement which is to be subjected to controlled traffic testing is described.

**2193. Jet Airport Lighting Requirements,** by M. A. Warskow. (AT) Future airport lighting fixtures will frequently be installed in heavy-duty paved surfaces and thus provision for them must be included in early phases of planning. Aids for approach, landing and ground traffic control are examined.

**2194. Elastic Bending of Layered Plates,** by K. S. Pister and S. B. Dong. (EM) A system of equations governing the non-linear bending of plates consisting of two or more bonded, thin layers is presented.

**2195. Flexible Surfaces on Viscoelastic Subgrades,** by B. C. Hoskin and E. H. Lee. (EM) This report is concerned with the analysis of stress and deformation of a subgrade strengthened by a flexible surface plate subjected to a load distribution.

**2196. Solutions for One-Dimensional Structural Lattices,** by Donald L. Dean, Jr. and Selmo Tauber. (EM) A brief argument is presented on the advantages of using closed form solutions to difference equations as a tool for structural analysis.

**2197. Electrical Analog for Earthquake Yield Spectra,** by G. N. Bycroft, M. J. Murphy and K. J. Brown. (EM) An electrical analog has been designed to simulate a damped single degree of freedom, elasto-plastic structure subjected to an earthquake.

**2198. The Neutral Axis in Plastic Bending of Beams,** by Aris Phillips. (EM) The motion of the neutral axis in symmetrical pure bending of beams in plasticity is examined.

**2199. Laterally Loaded Thin Flat Plates,** by William A. Bradley. (EM) Certain laterally loaded thin plates were studied experimentally, using the Moire method, and analytically, by finite differences. The procedures followed in this study are summarized.

**2200. The Hydraulic Design of Slotted Spillway Buckets,** by G. L. Beichley and A. J. Peterka. (HY) A slotted roller bucket for use



as a submerged energy dissipator at the base of an overfall is developed from hydraulic model tests and is compared with a solid-type bucket.

**2201. Performance of Flood Prevention Works During the 1957 Floods**, by Charlie M. Moore. (HY) The hydrologic and structural performance of watershed protection and flood prevention works of the Soil Conservation Service in Arkansas, Oklahoma and Texas during the severe storms and floods of April, May and June, 1957 is reviewed in this paper.

**2202. Wave-Induced Motion of Bottom Sediment Particles**, by P. S. Eagleson and R. G. Dean. (HY) Theoretical analyses are presented yielding expressions for incipient motion and net velocity of single spherical bottom sediment particles under oscillatory waves.

**2203. Dewatering Pipeline Coal Slurry**, by Clarence A. Dauber and Neal F. Gill. (PL) This paper describes the design of the dewatering and drying facilities for the first successful long distance coal slurry pipe line transportation system.

**2204. Regulation of Pipeline Design and Construction**. (PL) Development of Canadian oil and gas has resulted in regulation of pipeline design and construction by the provinces of Alberta, British Columbia, Manitoba and Saskatchewan. These regulations are here compiled and abstracted.

**2205. Bibliography on Pipeline Design, Construction and Operation: Progress Report of the Task Committee on Compilation of Bibliography of Reference Materials on Pipeline Design and Construction of the Committee on Pipeline Design, Specifications and Operating Standards of the Pipeline Division**. (PL) The Pipeline Division, through a Task Committee, has released a Compilation of Bibliography of Reference Materials on Pipeline Design and Construction.

**2206. Control of Cracking in Concrete Gravity Dams**, by William R. Waugh and James A. Rhodes. (PO) This paper traces the evolution of crack control measures and describes current Corps of Engineers practices and results.

**2207. Field Study of Interior Temperatures in Concrete**, by D. L. Houghton. (PO) Interior temperatures attained by concrete in a thin arch and gravity dam are reported.

**2208. Raising Transmission Towers with Energized Lines**, by A. G. Masters and E. J. Gesing. (PO) To build additional lines and to reconductor existing lines with larger wires, towers on existing lines are increased in height by adding an extension to the bottom.

**2209. Addition to Generating Capacity At Wilson Dam**, by Robert A. Monroe. (PO) This

paper outlines the planning and design of Wilson Dam and power plant and examines the major problems of construction for a 3-unit power plant extension of 162,000-kw capacity to be completed in 1961.

**2210. A Statistical Study of Soil Sampling**, by Thomas H. Thornburn and Wesley R. Larsen. (SM) This is a study undertaken to determine the number of samples needed to obtain reasonable correlations between pedologic soil types and their engineering properties.

**2211. Construction Materials Control—AASHO Road Test**, by James F. Shook. (SM) A brief description of some of the test methods and statistical quality control procedures used during construction of the AASHO Test Road is given.

**2212. Subsurface Exploration in Permafrost Areas**, by James R. Cass. (SM) Soil sampling techniques used in two subsurface investigation programs undertaken in the Arctic are described and compared.

**2213. Construction Pore Pressures in an Earth Dam**, by C.Y. Li. (SM) This paper presents the experience on construction pore pressures in a rolled earth dam and proposes a new method for predicting these pressures.

**2214. Rate of Constructing Embankments on Soft Foundation Soils**, by Herbert L. Lobdell. (SM) Procedures for predicting and controlling the rate of construction of embankments on soft weak foundation soils are presented.

**2215. Major Power Station Foundation In Broken Limestone**, by W. F. Swiger and H. M. Estes. (SM) Subsurface pinnacles of limestone surrounded by rubble in clay of varying consistency require detailed examination at each building column and equipment foundation to establish an economical type of design for each foundation for a steam power plant.

**2216. Structure and Strength Characteristics of Compacted Clays**, by H. B. Seed and C. K. Chan. (SM) The influence of soil structure on shrinkage, swelling, swell-pressures, stress-deformation characteristics, undrained strength, pore-water pressures and effective strength characteristics is described.

**2217. Design of Underseepage Control Measures For Dams and Levees**, by W. J. Turnbull and C. I. Mansur. (SM) Methods of controlling seepage and excessive hydrostatic pressures beneath dams and levees founded on deep strata of pervious sands are presented in this paper.

**2218. Matrix Solution of Beams With Variable Moments Of Inertia**, by Ming L. Pei. (ST) Using finite differences and matrix algebra, new formulas are developed which are explicit in the



desired quantities and are especially suitable for use in digital computer programs.

**2219. Reinforced Concrete Folded Plate Construction**, by Charles S. Whitney, Boyd G. Anderson and Harold Birnbaum. (ST) This paper presents design methods and discusses experience with the construction of reinforced concrete folded plate thin shells for the roofs and floors of hangars, auditoriums, warehouses and other buildings.

**2220. Behavior Of Structures During Earthquakes**, by G. W. Housner. (EM) The behavior of structures during earthquakes is described by response spectrum curves which show the effect of size and distance of earthquake and period and damping of structure.

**2221. Laterally Deflected Columns**, by John Sherman. (ST) This paper considers the case of a column of which the unbent axis is rotated about one end due to the deflection of the other end, a condition which occurs in portals and bents when subjected to lateral loading.

**2222. Theory and Test Results On The Fatigue Of Metals**, by F. Stuessi. (ST) This paper presents an empirical fatigue relationship between the mean stress and the alternating stress of a cycle; five material characteristics; and the resulting number of cycles to failure.

**2223. Bending Moments on Shell Boundaries**, by H. H. Bleich and M. G. Salvadori. (ST) This paper is concerned with an estimate of edge effects and their penetration for the case of hyperbolic paraboloids supported on straight generatrices.

**2224. Hydraulic Characteristics Of Gate Slots**, by J. W. Ball. (HY) Flow turbulence within gate slots, and cavitation damage just downstream from gate slots, occur when wheel (or roller) gates and slide gates are operated at small openings under heads in excess of about 35 feet.

**2225. An Analysis Of A Simple Surge Tank**, by Frank U. Druml. (HY) This article presents a method for eliminating trials in the arithmetic-step analysis of accelerated flow in a conduit served by a surge tank.

**2226. Design, Operation and Maintenance Of Intakes, Racks And Booms: Progress Report Of The Committee On Operation And Maintenance Of Hydroelectric Generating Stations Of The Power Division.** (PO) This report compiles certain available data regarding intakes, racks and booms and considers the design philosophy pertaining to them.

**2227. Design and Selection of Hyperbolic Cooling Towers**, by R. F. Rish and T. F. Steel.

(PO) The structural design of hyperbolic cooling towers is examined with particular reference to wind stresses in the shell.

**2228. American Power Plant Cooling Towers**, by J. A. Scarola. (PO) This paper reviews the historical development of American power plant cooling towers and the civil engineering aspects of the presently accepted mechanical draft towers.

**2229. The Design Of Folded Plates**, by Eliahu Traum. (ST) Various design theories of folded plate structures are critically reviewed; the advantages and generality of the Method of Particular Loadings are stressed.

**2230. Commentary On Plastic Design In Steel: Additional Design Considerations—I Progress Report Number 3 Of The Joint WRC-ASCE Committee On Plasticity Related To Design**, by Lynn S. Beedle. (EM) This paper, third in a series of reports on plastic design, considers shear force and local buckling of flanges and webs.

**2231. Commentary On Plastic Design In Steel: Additional Design Considerations—II Progress Report Number 4 of the Joint WRC-ASCE Committee on Plasticity Related To Design**, by Lynn S. Beedle. (EM) This fourth paper in the series on plastic design deals with the problem of lateral buckling of beams and considers variable repeated loading.

**2232. Discussion of Proceedings Paper 1658, 1892, 2102.** (AT) David Williams closure to 1658. J. M. Merzweiler and C. A. Anderson on 1892. William C. Borland closure to 2102.

**2233. Discussion of Proceedings Paper 1577, 1908.** (PL) L. M. Haupt closure to 1577. Arthur L. Collins on 1908.

**2234. Discussion of Proceedings Paper 1581, 1693, 1897, 1990.** (EM) G. Haaijer and B. Thurlimann closure to 1581. Frank L. Dimaggio closure to 1693. Gideon P. R. Von Willich closure to 1897. George Winter closure to 1990.

**2235. Discussion of Proceedings Paper 1808, 1859, 1996, 2057.** (HY) Franklin F. Synder closure to 1808. D. Lee Harris closure to 1859. P. Danel and G. Ransford, Rufus Oldenburger, Ignacy Swiecicki, R. A. Sutherland, Francis E. Swain, Evangelisti and B. Poggi on 1996. John C. Geyer on 2057.

**2236. Discussion of Proceedings Paper 1729, 1824, 1863, 1999, 2001.** (SM) H. L. Su closure to 1729. Otto H. Meyer closure to 1824. Andrew M. Braswell Jr. closure to 1863. J. Amorcho on 1999. A. A. Eremin on 2001.

**2237. Discussion of Proceedings Paper 1694, 1816, 1820, 1854, 1865, 1909, 1970, 2004, 2037. (ST)** J. G. MacGregor and C. P. Seiss corrections to discussion of 1694. Panagiotis D. Moliotis closure to 1816. D. G. Fertis and E. C. Zobel closure to 1820. Charles P. C. Tung closure to 1854. Kuang-Han Chu and Algis Pabarcus closure to 1865. Sidney A. Guralnick closure to 1909. W. R. Penman and E. F. Ball on 1970. A. A. Eremin on 2004. O. A. Glogau, M. L. Pei, Michael Jordan on 2037.

**2238. Discussion of Proceedings Paper 1556, 1671, 1733, 1738, 1946, 1947, 2061. (PO)** G. R. Scott, J. L. Sherard on 1556. F. L. Lawton on 1671. H. E. Lloyd, O. I. Moore, and W. F. Getts on 1733. Robert J. Pope closure to 1738. G. Dugan Johnson on 1946. W. S. Mellquhan, G. Dugan Johnson on 1947. Adolph A. Meyer on 2061.

**2239. Alpha-Gamma "Hot" Cells For Entry By Personnel, by John M. Ruddy. (ST)** The basic engineering definitions and the effect of the philosophy of maximum set-up and maintenance directly by people on design criteria are presented for this type of "hot" cell.

**2240. Non-Steel Cylinder Prestressed Concrete Pipes, by S. R. Hubbard. (PL)** Design criteria for prestressed concrete pipes manufactured without a steel cylinder membrane are presented.

## NOVEMBER

**Journals: Hydraulics, Sanitary Engineering, Structural**

**2241. Cavitation Damage of Roughened Concrete Surfaces, by Donald Colgate. (HY)** The paper reviews a laboratory study concerning the evaluation of the cavitation potential of various types of roughened concrete surfaces.

**2242. Mountain Channel Treatment in Los Angeles County, by W. R. Ferrell. (HY)** In the San Gabriel Mountains of Los Angeles County, channel treatment projects are being undertaken to lessen the financial burden of flood protection and to conserve water. This paper pre-

sents a brief history and the current status of these projects.

**2243. Electronic Computers Used For Hydrologic Problems, by Francis E. Swain and Herbert S. Riesbol. (HY)** The need for solving complex hydrologic problems rapidly has led Bureau of Reclamation engineers to the utilization of electronic computers for such studies.

**2244. Digital Computers For Water Resources Investigations, by G. Earl Harbeck, Jr. and W. L. Isherwood, Jr. (HY)** Digital computing equipment is now being used by the U. S. Geological Survey to analyze published streamflow data and to process data obtained in connection with water-loss studies.

**2245. Hydraulic Downpull Forces On High Head Gates, by Donald Colgate. (HY)** Model studies are described in which both the direct weighing method and the pressure area computation method were used to determine hydraulic downpull on two high head gates.

**2246. New Developments in Sewage Sludge Treatment, by F. G. Nelson and W. E. Budd. (SA)** Reduction in digestion volume requirements utilizing decreased detentions, pre-thickening and gaseous mixing has been a primary goal of recent developments.

**2247. Twenty Years Of Sewage Sludge Burning At Barberton, Ohio, by Charles G. Pettit. (SA)** Incineration as a means of disposing of raw sewage sludge cake from a domestic sewage treatment plant is examined. Following is a cost analysis and a breakdown of the various properties of the sewage and final product.

**2248. Evaluation of Education and Research in Solid Wastes Engineering—**

Twenty-fourth Report of the Committee on Sanitary Engineering Research of the Sanitary Engineering Division. (SA) This paper presents the results of a survey investigating the extent of current solid wastes engineering, education, and research at sixty American universities and colleges.

2249. Metropolitan Section, ASCE, Seminar On Sanitary Engineering Research—Twenty-fifth Progress Report Of The Committee On Sanitary Engineering Research Of The Sanitary Engineering Division. (SA) The paper reviews a seminar at Manhattan College on June 5, 1959 concerning the problems of Sanitary Engineering Research and means of promoting both finances and competent students in the field.

2250. Refuse Volume Reduction In A Sanitary Landfill—Twenty-Sixth Progress Report Of The Committee On Sanitary Engineering Research Of The Sanitary Engineering Division. (SA) Presented are the results of an engineering investigation undertaken to ascertain the extent of refuse volume reduction that can be achieved initially and after a long period of storage in a sanitary land fill.

2251. Mean Residence Time Of A Liquid In A Tricking Filter, by Morton D. Sinkoff, Ralph Porges and James H. McDermott. (SA) This paper presents the results of initial hydraulic studies in which the mean residence time was determined for tap water applied to columns packed with spherical media under conditions of varying hydraulic load-injection rates, media size and depth.

2252. Waste Water Reclamation For Golf Course Irrigation, by Robert C. Merz. (SA) The general considerations for reuse of reclaimed waste water for golf course irrigation are delineated.

2253. A Balanced Ecological System For Space Travel, by Linvil G. Rich, William Marcus Ingram and Bernard B. Berger. (SA) The paper analyses the nature and requirements of a sustenance system in a "closed" environment.

2254. Industrial Waste Disposal Tailored To Stream Flow, by C. J. Velz. (SA) Two possibilities for more efficient utilization of water resources hold promise: either the stream flow should be regulated to make a higher level of total flow usable; or the industrial waste discharge should be regulated, tailored to the varying pattern of stream flow.

2255. The Waste Water Role In Meeting Water Requirements, by Max Bookman. (SA) The water-deficient area in the southern portion of California faces the need to supplement the existing local and imported sources of water supply; this requires that consideration be given to extending the use of existing sources by the reclamation of waste waters discharged to the ocean.

2256. Ultimate Load Theory For Concrete Frame Analysis, by A. L. L. Baker. (ST) This paper reviews an idealized conception of elastic members joined by plastic hinges; basic parameters, minimum values and theoretical assumptions for strength and deformation calculations of members and hinges; and the behavior of ultimate designs under working load.

2257. Fixed Point Method Of Moment Design, by S. E. Huey. (ST) A quick and simple method for finding moments in building frames is presented in this paper.

2258. Design of the Shippingport Reactor Plant Container, by J. J. Niland. (ST) Stipulation of external secondary shielding dictated the use of cylinders in partially buried enclosures. Heavy in-

ternal loads supported by the vessels, temperature and pressure movements, and fuel handling considerations complicated the structural design.

**2259. Analysis Of Rigid Frames By Electronic Computation**, by Ardis White. (ST) Presented in this paper is a description of a digital computer program written to solve two-hinged variable-I rigid frames; and computer output forms suitable for direct use in an engineering report.

**2260. Discharge Formula For Straight Alluvial Channels**, by H. K. Liu and S. Y. Hwang. (HY) The proposed discharge formula contains a discharge coefficient and exponents for hydraulic radius and slope. Both the coefficient and the exponents are given as functions of bed forms and bed material.

**2261. Discussion Of Proceedings Paper 1867, 1897, 1974, 2005, 2037, 2065.** (HY) Louis M. Laushey closure to 1867. Lawrence P. Johnson and Herbert A. Sawyer closure to 1897. Raymond Archibald on 1974. Morris Ojalvo on 2005. J. J. Polivka on 2037. Ming L. Pei on 2065.

**2262. Design Of Prestressed Composite Steel Structures I**, by Rudolph Szilard. (ST) Design and construction problems of statistically determinate prestressed composite structures (concrete slab and steel beams) are treated.

**2263. Hydraulic Characteristics Of Hollow-Jet Waves**, by D. M. Lancaster and R. B. Dexter. (HY) Field tests of a 96-inch hollow-jet valve have revealed close agreement between model and prototype piezometric measurements, valve needle thrust forces, and rates of discharge.

**2264. Steel Building And Fire Protection In Europe**, by Curt F. Kollbrunner. (ST) Recent trends in steel build-

ing construction in Europe are presented. Noted are the influence of improved and automatic welding equipment and the more general use of basic electrodes. The behavior of steel under influence of fire and the classifications of fire danger are reviewed.

**2265. Effect Of Aquifer Turbulence On Well Drawdown**, by Joe L. Mogg. (HY) The change from laminar flow to turbulent flow, in the case of water flowing through sand, occurs over a wide transition zone beginning with a Reynolds number of about 10. A method for estimating the exponent of the velocity term for head loss calculations involving flow into wells is presented.

**2266. Sludge Disposal In Philadelphia**, by Samuel S. Baxter. (SA) The paper describes the plants and problems of the sludge disposal in Philadelphia as well as the financial aspects.

**2267. Control Of Air Pollution In Los Angeles County**, by Robert L. Chass. (SA) Over the past ten years, an expenditure of more than 70 million dollars has prevented more than two thousand tons of air contaminants from entering the Los Angeles atmosphere each day. The devices employed are here reviewed.

**2268. Salaries of Local Environmental Health Personnel in 1956 Report of the Committee on Salaries Conference of Municipal Public Health Engineers.** (SA) The report is based upon a salary survey of over 3,000 positions in 371 local health departments. The report covers conclusions and recommendations on salaries found among sanitarians, sanitary engineers and other professional personnel in Environmental Health Programs in local health departments.

**2269. Discussions of Proceedings Paper 1833, 1834, 1890, 1901, 1994, 1997, 2018, 2020, 2021, 2056, 2057.** (HY) Ernest F. Brater, John S. McNown and Leslie Stair

closure to 1833. J. Harold Zoller and Arno T. Lenz closure to 1834. Lorenz G. Straub and Alvin Anderson closure to 1890. Glen E. Stout closure to 1901. William H. Sammons on 1994. William G. Peterson on 1997. Peter Ackers on 2018. Emmett M. Laursen on 2020. P. Bruun on 2021. Robert O. Thomas on 2056. Fred W. Blaisdell and Phillip W. Manson on 2057.

**2270. Cold-Formed, Light-Gage Steel Construction**, by George Winter. (ST) Structural members, panels, and decks cold-formed from sheet or strip steel have gained wide acceptance in building construction. The paper reviews some of the peculiarities of the design of light-gage construction.

## DECEMBER

**Journals:** City Planning, Highways, Irrigation and Drainage, Power, Soil Mechanics, Structural, Waterways and Harbors, Hydraulics.

**2271. Discussion Of Proceedings Paper 1902, 1996, 2018, 2020, 2022, 2056, 2058, 2085, 2149.** (HY) John B. Lockett closure to 1902. John P. Herak and Salvador Rodriguez on 1996. J. Van Malde and E. V. Richardson on 2020. G. T. Berry, G. B. Fenwick and F. R. Brown on 2022. C. Biemond on 2056. J. R. Bowman on 2058. F. F. Escoffier on 2085. Byron N. Aldridge, T. R. Anand on 2149.

**2272. Trends in Public Transit Improvement Programs**, by W. S. Rainville, Jr. (CP) This paper describes recent trends in public transit improvement programs, classifying them into appropriate groupings and giving specific examples of each type of improvement.

**2273. Characteristics of Traffic Flow on Freeways**, by Adolph D. May, Jr. (HW) Traffic flow characteristics were studied on two high density controlled access facilities in Detroit, Michigan. Average speeds and volumes were recorded on a per minute, per lane basis.

**2274. Engineering Law Applied to Highway Drainage**, by R. Robinson Rowe. (HW) Applications of engineering law to highway drainage are exemplified after introductory definitions of legal terminology.

**2275. Passenger Data for Urban Transportation Planning**, by Nathan Cherniack. (HW) Freight and passenger movements in urban areas and difficulties of integration in solving urban transport problems are examined.

**2276. Factual Data for Urban Transportation Planning**, by R. R. Bartelsmeyer. (HW) This paper outlines the information that is needed to guide the thinking and planning for future transportation systems.

**2277. Spacing and Interchange on Freeways in Urban Areas**, by Jack E. Leisch. (HW) Bases for spacing of interchanges, including schemes for increasing operational efficiency, are presented.

**2278. Modern Curvilinear Highway Location and Design**, by Frederick W. Cron. (HW) Good highway locations and the satisfactory appearance of highways are reviewed.

**2279. Glossary of Electronic Computer Terminology: Progress Report of the Committee on Increasing Highway Engineering Productivity of the Highway Division.** (HW) The glossary covers approximately 350 commonly used terms and provides a working knowledge of computer terminology both for the engineer and for those requiring a more general understanding of the terms.

**2280. Use of Mathematical Models in Estimating Travel**, by Alan M. Voorhees. (HW) On the bases of relationships developed from numerous O-D studies that have been conducted throughout the country, it is now feasible to estimate urban travel patterns by mathematical procedures.

**2281. Artificial Recharge of Ground Water Reservoirs in California**, by Ray-



mond C. Richter and Robert Y. D. Chun. (IR) The paper outlines some of the present needs for practice of artificial recharging of ground water in California.

2282. This Problem of Water Rights, by Robert L. Smith. (IR) The paper reviews certain basic concepts involved in the development of a "water rights" law.

2283. Legal Aspects of Ground Water Utilization, by Robert O. Thomas. (IR) An investigation of the historical basis of water rights doctrines is followed by a presentation of some of the legal problem areas which may arise in planning future ground water operations.

2284. Evaluating Furrow and Corrugation Irrigation, by Dell G. Schockley. (IR) Described is a procedure for evaluating furrow or corrugation irrigation to determine how uniformly and efficiently water is being supplied for crop growth.

2285. The Lemolo No. 1 Rockfill Dam, by J. C. Boyle and W. R. Barrows. (PO) The paper describes a rockfill reinforced concrete deck dam built during 1953-1959 for the California Oregon Power Company.

2286. Quick Design of Air Vents for Power Intakes, by G. S. Sarkaria and O. S. Hom. (PO) For closed conduit systems without surge tanks, a common parameter is derived and correlated with vent diameter used in 35 hydroelectric installations.

2287. Power from Geothermal Steam at the Geyser Power Plant, by Albert W. Bruce and Ben C. Albritton. (PO) The area and history of the geysers in northern California is reviewed; the testing of steam well flow, non-condensable gases and corrosion is described.

2288. The Stratton Steam Electric Station, by C. H. Alban. (PO) Planning and construction of the first four units of the Ohio Edison Company's 700 megawatt Stratton Station scheduled for completion in 1962 will extend over a decade.

2289. Underground Power Stations in Italy, by Dante Finzi, Mario Mainardis and Carlo Semenza. (PO) The reasons for underground plants and statistical data on all of Italy's underground plants are presented.

2290. Containment of Nuclear Plants, by Richard N. Bergstrom. (PO) Present practices in design and construction of containment vessels are reviewed.

2291. Determination of Stress on Anchor Blocks, by M. R. Bouchayer. (PO) The use of a more accurate determination of operating forces and mathematical formulas results in a more economical system of anchor blocks.

2292. Compaction of Sands and Bearing Capacity of Piles, by G. G. Meyerhof. (SM) The compaction characteristics of sands under impact are analyzed.

2293. Undrained Strength of Compacted Clays after Soaking, by H. B. Seed and C. K. Chan. (SM) The influence of soil structure and such structure-determining factors as molding water content and method of compaction on the strength of compacted clays after soaking is described.

2294. A Review and Evaluation of Soil-Cement Pavements, by James K. Mitchell and Dean R. Freitag. (SM) The factors affecting the properties of soil-cement are reviewed.

2295. Pile Construction in Permafrost, by J. A. Pihlainen. (SM) General construction problems and practice in permafrost areas, notably Canada, are reviewed.

2296. Construction and Maintenance of Underseepage Control Measures, by W. J. Turnbull and C. I. Mansur. (SM) A summary of basic principles involved in the construction and maintenance of various underseepage control measures is presented.

2297. Type Features of the Ohio Shoreline of Lake Erie, by Howard J. Pincus.

(WW) With the aid of aerial photographs, features of the Ohio section of Lake Erie's shoreline are examined.

**2298. Deep-Draft Navigation on the Great Lakes, by Walter E. McDonald.** (WW) This paper describes studies undertaken in the present program for deepening the Connecting Channels and harbors to serve adequately the modern bulk cargo vessel fleet on the Great Lakes.

**2299. Methods of Correcting Wave Problems in Harbors, by Ernest F. Brater.** (WW) The causes of and some of the cures for objectionable wave conditions in harbors are outlined.

**2300. An Approach to the Study of Overseas Traffic Potentials, by Wilfred G. McLennan.** (WW) This paper deals with the methodology for estimating traffic potentials of general cargo in the United States foreign trade.

**2301. Natural By-Passing of Sand at Coastal Inlets, by Per Bruun and F. Gerstén.** (WW) This article investigates two ways of by-passing as a function of littoral drift and tidal flow characteristics of the inlet in question.

**2302. Investigation of Bluff Recession Along Lake Erie, by Robert Chieruzzi and Robert F. Baker.** (WW) A systematic approach to the analysis of bluff recession problems is presented.

**2303. Port Structures in Long Beach Harbor, by Bob N. Hoffmaster, Cort T. Johnson and Charles L. Vickers, Jr.** (WW) The port of Long Beach is guided by a long range master plan whose purpose is to provide an efficient and self-sustaining port which will meet the present and future needs of the surrounding area.

**2304. Public Services on Controlled Access Highways, by C. W. Hartford.** (HW) The article relates the services to

the public on controlled access highways to urban, rural and toll road projects and divides the services reviewed into services of necessity and services of convenience.

**2305. Lessons of Collapse of Vancouver 2nd Narrows Bridge, by A. Hrennikoff.** (ST) The author sees in this tragic occurrence not only a mere consequence of an error in design but also a manifestation of the effects of some factors not yet fully appreciated.

**2306. San Diego Transportation Planning Studies, by Edward M. Hall.** (CP) The concepts and administrative organization of this metropolitan area transportation study are described.

**2307. Coordinating Public Works and Urban Renewal in Kansas City, Kansas, by Eldrige H. Lovelace and Ramon Duran.** (CP) A useful and effective means to coordinate the timing and location of public works with urban renewal programs is delineated.

**2308. Cut-Off Points for Cover Plates, by Nat T. Kanarek.** (ST) A method is presented which results in a chart from which the theoretical cut-off point can be determined with sufficient accuracy.

**2309. An Engineering View of Public Transit, by John C. Kohl.** (CP) This paper, intended to stimulate discussion rather than to present formal conclusions, describes five divergent views of public transit.

**2310. The Vortex Chamber as an Automatic Flow-Control Device, by R. C. Kolf and P. B. Zielinski.** (HY) This paper presents a rational explanation of the resulting coefficient variation from dynamic similarity.

**2311. The Settling Properties of Suspensions, by Ronald T. McLaughlin.** (HY) The results of an analytical and experimental investigation of the settling properties of suspensions of particles in fluid are presented.

**2312. An Unusual Deposit in a Hydraulic Tunnel, by Arthur Lewis Pollard**

and Hazen Etnier House. (PO) This paper describes chemical and bacteriological investigations to determine means of reducing the head loss.

**2313. Simplified Procedure for Stress Analysis of Gravity Dams**, by R. S. Sandhu. (PO) By applying the formula and tables derived in this paper a quicker solution of the "Principal Stresses", by the Gravity Analysis Method, can be calculated for a gravity masonry dam.

**2314. Analysis of Continuous Trusses by Carry-Over Moments**, by Jan J. Tuma. (ST) A general procedure for the analysis of continuous trusses subjected to stationary or moving loads is presented.

**2315. Suggested Legislation on Flood Plain Regulation**, by Joseph I. Perrey. (HY) If communities are to regulate the use of flood plains in a manner that will tend to reduce the damage from floods, statutory authority must be provided.

**2316. Improved Tunnel Spillway Flip Buckets**, by T. J. Rhone and A. J. Peterka. (HY) This paper considers several buckets, of the type used to deflect or flip tunnel spillway discharges downstream, in terms of their desirable or undesirable features.

**2317. Tidal Characteristics from Harmonic Constants**, by Bernard D. Zetler. (HY) Harmonic analysis of tide observations determines harmonic constants (amplitudes and epochs) of the harmonic constituents of the tide.

**2318. A Case of Critical Surging of a Moored Ship**, by Basil W. Wilson. (WW) An analysis is made of the circumstances in which an oil tanker developed critical surging motions and broke adrift after rupture of its mooring lines.

**2319. Permafrost Aspects of Hudson Bay Railroad**, by J. L. Charles. (SM) Factors conducive to causing the condition of permafrost, the possible extent of this condition in Northern Canada and

its effect on construction and maintenance are described.

**2320. Linearly Variable Load Distribution on a Rectangular Foundation**, by Aris C. Stamatopoulos. (SM) The vertical stresses and surface displacements caused by a rectangular linearly variable load distribution applied at the level surface of an idealized body are given in terms of equations and charts.

**2321. Vierendeel Bents with Nonprismatic Members**, by S. L. Lee and F. P. Wiesinger. (ST) Inclined-chord Vierendeel bents with members of variable section are analyzed by means of a modified moment-distribution procedure in which the equilibrium between the internal forces in the chord members and the external forces is maintained throughout the entire distribution operation.

**2322. Computer Design of a Multi-story Frame Building**, by A. M. Lount. (ST) The selection and justification of design method used (moment distribution), procedures, and examples are presented.

**2323. Discussion of Proceedings Paper 1799**. (HW) Vedat A. Verlici closure to 1799.

**2324. Discussion of Proceedings Paper 2048, 2055**. (CP) Nathan Cherniack on 2048. R. A. Haber and W. J. Miller, Jr., George H. Herrold on 2055.

**2325. Discussion of Proceedings Paper 1732, 2062, 2135**. (SM) T. H. Wu on 1732. J. L. Sherard on 2062. Michael Praszker, Morris Grosswirth on 2135.

**2326. Discussion of Proceedings Paper 2067, 2068, 2171**. (WW) Basil W. Wilson on 2067. A. F. Benscheidt on 2068. Robert Y. Hudson corrections to 2171.

**2327. Discussions of Proceedings Paper 1963, 1964, 2059, 2154, 2156, 2158**. (IR)

Wayne D. Criddle and R. Keith Higginson, C. P. Christopoulos, W. C. Munson, G. Marvin Litz on 1963. A. R. Robinson, R. H. Brooks on 1964. M. R. Lewis, Robert O. Thomas, S. T. Harding on 2059. M. Maasland on 2154. M. Maasland on 2156. M. Maasland on 2158.

**2328. Discussion of Proceedings Paper 1734, 1737. (PO)** G. H. Condit on 1734. C. M. Roberts on 1737.

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## NEW YORK

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- CHILDS, L. D.  
Dsc of 1800HW3: Bengt F. Friberg (2180HW3)
- CHINN, JAMES  
Dsc (2186ST7) of "Design Table for Steel Columns with Eccentric Loads" (2035ST5)
- CHOU, TSUNG-LIEN  
Clo (2181SA5) to "Resistance of Sewage Sludge to Flow in Pipes" (1780SA5)  
Dsc of 1780SA5: M. B. McPherson, Harold E. Babbitt (1985SA2)  
Dsc of 1780SA5: Shu-t'ien Li (2044SA3)  
Dsc (1987WW1) of "The Suez Canal—Its Chronicle and Bibliography" (1770WW4)  
Dsc (2271HY12) of "Resistance Properties of Sediment-Laden Streams" (2020 HY5)
- CHOW, VEN TE  
"Determination of Hydrologic Frequency Factor" (2064HY7)  
Dsc (1989HY3) of "Divining Rods Versus Hydrologic Data and Research" (1809HY5)  
Dsc (1989HY3) of "Synthetic Flood Frequency" (1808HY5)
- CHRISTOPOULOS, CONSTANTINE P.  
Dsc (2327IR4) of "Monthly Consumptive Use Requirements for Irrigated Crops" (1963IR1)
- CHU, KUANG-HAN  
Clo (2237ST8) to "Biaxially Loaded Reinforced Concrete Columns" (1865ST8)  
Dsc of 1865ST8: Tung Au (1988ST3)  
Dsc of 1865ST8: Frederick Norman Pannell (2075ST6)  
Dsc (2009ST4) of "Shear Strength of Reinforced Concrete Beams" (1909ST1)
- CHUN, ROBERT Y. D.  
See Richter, Raymond C. (2281IR4)

- CIZEK, L.  
Dsc (2043ST5) of "The Factor of Safety in Design of Timber Structures" (1838ST7)  
Dsc (2186ST7) of "Statistical Approach to Working Stresses for Lumber" (1939ST2)
- CLARE, HERBERT C.  
"Water Quality Problems in the Columbia River Basin" (2030SA3)
- CLARK, BRUCE E.  
Dsc (1951SM1) of "Pressure Grouting Fine Fissures" (1731SM3)
- CLARK, C. O.  
Dsc (1919HY1) of "Mechanical Analogs Aid Graphical Flood Routing" (1585HY2)
- CLARK, FREDERICK P.  
"Professional Registration of City Planners: Growth of City Planning" (2051CP1)
- CLEARY, EDWARD J.  
Clo (2181SA5) to "Sleuthing the Behavior of a River" (1847SA6)  
Dsc of 1847SA6: G. E. Walker, Bernd H. Dieterich (2044SA3)
- CLEAVE, WALTER C.  
"Airport Revenue Bond Financing" (2112AT3)
- CLEAVES, A. B.  
Clo (2011SM2) to "Geological Factors in Tunnel Construction: Tools and Techniques" (1648SM2)  
Dsc (1987WW1) of "The Suez Canal—Its Chronicle and Bibliography" (1770WW4)
- CLEMMER, H. F.  
Dsc (2180HW3) of "Early Soil-Cement Research and Development" (1899HW1)
- CLINCH, R. L.  
See Patterson, F. W. (1953PO1)
- CLOUGH, R. W.  
Dsc (2043ST5) of "Direct Design of Optimum Indeterminate Trusses" (1867ST8)
- COBB, EDWIN B.  
Dsc (1921SA1) of "Controlled Submergence of Pittsburgh's Deep Sewers" (1717SA4) with Allen J. Burdoin
- COCHRANE, R. B.  
"Operation of Spillways in Northwest Projects" (2127HY8)
- COHEN, PIERRE  
Dsc (2098SA4) of "Treatment of Radioactive Wastes" (1930SA1)
- COLEBROOK, C. F.  
Dsc (1953PO1) of "Underground Power Plants in Scotland" (1675PO3)
- COLEMAN, DONALD G.  
Corr (1952ST2) to "Glued Laminated Wood Construction in Europe" (1840ST7)
- COLGATE, DONALD  
"Cavitation Damage of Roughened Concrete Surfaces" (2241HY11)
- "Hydraulic Downpull Forces on High Head Gates" (2245HY11)
- COLLINS, ARTHUR L.  
Dsc (2233PL3) of "Gilonite Solids Pipe Line" (1908PL1)
- COLLINS, RICHARD M.  
See Goedjen, Merle H. (1948PO1)
- CONDIT, G. H.  
Dsc (2328PO6) of "Rockfill Dams: Brownlee Sloping Core Dam" (1737PO4)
- CONNER, CARLTON N.  
Dsc (2180HW3) of "Early Soil-Cement Research and Development" (1899HW1)
- COOKE, B. R.  
"Analysis of Two-Column Symmetrical Bents" (2037ST5)  
Dsc of 2037ST5: O. A. Glogau, M. L. Pei, Michael Jordan (2237ST8)  
Dsc of 2037ST5: J. J. Polivka (2261ST9)  
Dsc of 2037ST5: Charles O. Heller (2329ST10)
- COOKE, J. BARRY  
Clo (1953PO1) to "The Haas Hydroelectric Power Project" (1529PO1)  
Dsc (2013PO2) of "Rockfill Dams: Performance of Mud Mountain Dam" (1745PO4)  
Dsc of 1746PO4: G. I. Davey (2013PO2)  
Dsc (2013PO2) of "Rockfill Dams: The Paradale Concrete Face Dam" (1747PO4)  
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- COOPER, G. S.  
Dsc (1916AT1) of "A Water-Borne Runway" (1658AT1)
- CORBETTA, ROGER  
Dsc of 1957CO1: Robert F. Borg (2178CO2)  
"Engineering Education and the Construction Industry: The Engineering Profession in Construction" (1957CO1)
- COWAN, HENRY J.  
Dsc (2075ST6) of "Review of Limit Design for Structural Concrete" (1878ST8)  
Dsc (2075ST6) of "Shear Strength of Reinforced Concrete Beams" (1909ST1)
- COWSER, K. E.  
"Radioactive Contaminant Removal from Waste Water: Evaluation of Performance" (2033SA3) with Roy J. Morton
- COYKENDALL, RICHARD  
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- CRANDALL, F. B.  
"Construction and Use of Models in Highway Planning" (1924HW1)
- CREIGHTON, ROGER L.  
Dsc of 2048CP1: Nathan Cherniack (2324CP2)  
"Urban Expressways: Joint Planning of Transportation and Land Use" (2048CP1)

- CRIDDLE, WAYNE D.  
Clo (1986IR2) to "Method of Computing Consumptive Use of Water" (1507IR1)  
Dsc (2327IR4) of "Monthly Consumptive Use Requirements for Irrigated Crops" (1963IR1)
- CRON, FREDERICK W.  
"Modern Curvilinear Highway Location and Design" (2278HW4)
- CULBIRTH, WILLIAM J., JR.  
"The Future of Airline Ground Transportation" (2111AT3)
- CULBREATH, MARK C.  
"Radioactive Contaminant Removal from Waste Water: Engineering Design Features" (2032SA3)
- CUNNINGHAM, C. W.  
Dsc (2186ST7) of "Design Table for Steel Columns with Eccentric Loads" (2035ST5)
- DALRYMPLE, TATE  
Clo (2045HY5) to "Northeastern Floods of 1955: Rainfall and Runoff" (1662HY3)
- DANEL, P.  
Dsc (2235HY10) of "Hydraulic Analysis of Surge Tanks by Digital Computer" (1996HY4)
- DANNER, ELLIS  
Dsc (2178CO2) of "Engineering Education and the Construction Industry: Graduates for Work in Construction" (1955CO1)  
Dsc (2180HW3) of "Early Soil-Cement Research and Development" (1899HW1)
- DAUBER, CLARENCE A.  
"Dewatering Pipeline Coal Slurry" (2203PL3) with Neal F. Gill
- DAVENPORT, A. G.  
Dsc (1988ST3) of "Wind Forces on Structures: Nature of the Wind" (1708ST4)
- DAVEY, GEOFFREY  
Dsc (2013PO2) of "Rockfill Dams: Salt Springs and Lower Bear River Concrete Face Dams" (1737PO4)  
Dsc (2013PO2) of "Rockfill Dams: Wishon and Courtright Concrete Face Dam" (1746PO4)
- DAVIS, CALVIN V.  
Dsc of 1741PO4: S. Sakurai (2013PO2)
- DAVIS, W. H.  
See Towne, W. W. (1985SA2)
- DAWSEY, J. V.  
Dsc (2182HY9) of "Relationships Between Pipe Resistance Formulas" (1962HY3)
- DAWSON, F. M.  
See Gyorog, D. A. (2019HY5)
- DAY, DAVID A.  
Dsc of 1955CO1: Paul F. Keim, Frank W. Stubbs, Jr., Ellis Danner (2178CO2)  
"Engineering Education and the Construction Industry: Graduates for Work in Construction" (1955CO1)
- DEAN, DONALD L.  
"Solutions for One-Dimensional Structural Lattices" (2196EM4) with Selmo Tauber
- DEAN, R. G.  
See Eagleson, P. S. (2202HY10)
- DeBERARD, W. W.  
Dsc of 1782SA5: Charles H. Capen (1921SA1)  
Dsc of 1782SA5: Herbert Moore (1985SA2)
- DEBLER, WALTER R.  
"Stratified Flow Into A Line Sink" (2093EM3)
- DE CAMPOS, FRANCISCO BARROS  
See Pichler, Ernesto (2137SM4)
- DEEGAN, GEORGE E.  
See Downs, Dallas I. (2006PO2)
- DEGENKOLB, HENRY J.  
"Design of Pitched and Curved Timber Diaphragms" (1911ST1)  
Dsc of 1911ST1: Ivan M. Nelidov (2152ST7)  
Dsc (1922ST1) of "Earthquake Design Criteria for Stack-Like Structures" (1696ST4)
- DeGUENIN, J.  
See Seed, H. B. (2011SM2)
- DEIGNAN, JOHN E.  
"Breakwater at Crescent City, California" (2174WW3)
- DEJONGHE, P.  
Dsc (2098SA4) of "Treatment of Radioactive Wastes" (1930SA1)
- DEMPSEY, JOHN G.  
Dsc (1918HW1) of "Quality Control for Large Highway Projects" (1626HW2)
- DEXTER, ROBERT B.  
See Lancaster, Dale M. (2263HY11)
- DICKINSON, M. L.  
Dsc (1951SM1) of "Design and Performance of Vermilion Dam, California" (1728SM3)
- DIETERICH, BERND H.  
Dsc (2044SA3) of "Sleuthing the Behavior of a River" (1847SA6)
- DILLEY, RUSSELL A.  
Clo (1987WW1) to "Shipboard Hydraulic Breakwater" (1569WW2)  
See Wiegel, R. L. (2071WW2)
- DiMAGGIO, FRANK L.  
Clo and errata (2234EM4) to "Dynamic Elastoplastic Response of Rigid Frames" (1693EM3)  
Dsc of 1693EM3: A. T. Matthews (1917EM1)
- DODD, JOSEPH C.  
Dsc (1953PO1) of "Rockfill Dams: Cherry Valley Central Core Dam" (1733PO4)
- DODGE, ALEXANDER  
Corr (1988ST3) to dsc (1922ST1) of "Analysis of Finite Beams on Elastic Foundation" (1722ST4)  
Dsc (1922ST1) of "Analysis of Finite Beams on Elastic Foundation" (1722ST4)

- DONG, S. B.  
See Pister, K. S. (2194EM4)
- DONNAN, WILLIAM W.  
Dsc of 1964IR1: David K. Todd and Jacob Bear (2179IR3)  
Dsc of 1964IR1: A. R. Robinson, R. H. Brooks (2327IR4)  
"Drainage of Agricultural Lands Using Interceptor Lines" (1964IR1)
- DOUGHERTY, N. W.  
"Methods of Accomplishing Professional Development" (2187PP2)
- DOWNS, DALLAS I.  
"Engineering Aspects of the Santa Susana Nuclear Power Station" with George E. Deegan and Robert F. Boggs
- DRAPER, CHARLES S.  
"Aircraft of the Future and Ports for Modern Flight Vehicles" (2103AT3)
- DREW, F. P.  
"Load Considerations for Beams" (1915ST1)
- DRONKERS, J. J.  
"Tidal Computations in Coastal Areas" (1977WW1)
- DRUML, FRANK U.  
"An Analysis of a Simple Surge Tank" (2225HY10)
- DUKE, C. MARTIN  
Dsc of 1730SM3: A. A. Eremin, N. N. Ambraseys (1951SM1)
- DUNN, IRVING S.  
Dsc of 2062SM3: J. L. Sherard (2325SM6)  
"Tractive Resistance of Cohesive Channels" (2062SM3)
- DURAN, RAMON  
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- DUVALL, BELMON U.  
"Special Pavement Requirements for Jet Aircraft Operations" (2015AT2)
- EAGLESON, P. S.  
"Wave-Induced Motion of Bottom Sediment Particles" (2202HY10) with R. G. Dean
- EBERHARDT, ANDREW  
Clo (1953PO1) to "Ambuklao Underground Power Station" (1598PO2)
- EBY, ROBERT E.  
"Design Standards for Timber Structures" (1938ST2)
- ECKENFELDER, W. WESLEY, JR.  
"Absorption of Oxygen from Air Bubbles in Water" (2090SA4)
- EDEN, E. W., JR.  
Dsc of 2058HY6: J. R. Bowman (2271HY12)  
"Floods of the Florida Everglades" (2058HY6)
- EINSTEIN, H. A.  
"An Electric Analog Model of a Tidal Estuary" (2173WW3) with James A. Harder
- ELDER, REX A.  
"Tidal Navigational Problems below Wilson Dam" (1983WW1)
- ELLEBY, HOTTEN A.  
Dsc (2185PP2) of "Pity the Poor Professors?—or Propagate Them!" (1870PP1)
- ELLISON, K. E.  
"Pavement Design Practices in Virginia" (2145HW3)
- ELSTON, JUDSON P.  
Clo (2011SM2) to "Cement and Clay Grouting of Foundations: Specifications for Pressure Grouting" (1548SM1)  
Dsc (1953PO1) of "Rockfill Dams: The Paradela Dam—Foundation Treatment" (1748PO4)
- EMMONS, W. F.  
"Deepening of Wilson Lock Eliminates Third Lockage" (2167WW3) with O. Lavik
- EREMIN, A. A.  
Dsc (1922ST1) of "Structural Dynamics in Earthquake-Resistant Design" (1695ST4)  
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Dsc (2075ST6) of "Elasto-Plastic Analysis of Continuous Frames and Beams" (1879ST8)  
Dsc (2186ST7) of "Aseismic Design of Structures by Rigidity Criterion" (1942ST2)  
Dsc (2236SM5) of "Physico-Chemical Properties of Soils: Role of Soil Technology" (2001SM2)  
Dsc (2237ST8) of "Short Flexible Suspension Bridges for Heavy Trucks" (2004ST4)
- ERICKSON, ERIC L.  
Clo (1988ST3) to "Application of AASHTO Specifications to Bridge Design" (1320ST4) with Neil Van Eenam
- ERLICH, HARRY  
See McGauhey, P. H. (2059IR2)
- ERNST, GEORGE C.  
Dsc (1952ST2) of "Review of Limit Design for Structural Concrete" (1952ST2)
- ESCOFFIER, F. F.  
Dsc (2271HY12) of "Roll Waves and Slug Flows in Inclined Open Channels" (2085HY7)
- ESTES, H. M.  
See Swiger, W. F. (2215SM5)
- EVANGELISTI  
Dsc (2235HY10) of "Hydraulic Analysis of Surge Tanks by Digital Computer" (1996HY4)
- EWING, BEN B.  
"Field Test of the Movement of Radioactive Cations" (1929SA1)
- FADUM, R. E.  
Dsc of 1826SM4: Edward S. Barber (1951SM1)



- FADUM, R. E. Continued**  
Dsc of 1826SM4: John A. Focht, Jr., Bernt Jakobson, R. G. Ahlvin, Paul A. Parisi (2011SM2)  
Dsc of 1826SM4: R. F. Legget (2077SM3)
- FANNON, MARCY B.**  
"Airline Experience in Airport Operation with Jet Aircraft" (2116AT3)
- FARQUHARSON, F. B.**  
Clo (2152ST7) to "Wind Forces on Structures: Structures Subject to Oscillation" (1712ST4)  
Dsc of 1712ST4: Jacob Feld (1922ST1)  
Dsc of 1712ST4: C. Scruton (1988ST3)  
Dsc (1952ST2) of "Correlation of Predicted and Observed Suspension Bridge Behavior" (1944ST2)
- FELD, JACOB**  
Dsc (1922ST1) of "Wind Forces on Structures: Nature of the Wind" (1708ST4)  
Dsc (1922ST1) of "Wind Forces on Structures: Fundamental Considerations" (1709ST4)  
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Dsc (1922ST1) of "Wind Forces on Structures: Structures Subject to Oscillation" (1712ST4)
- FENSKE, CARL W.**  
Dsc (2011SM2) of "Procedure for Rapid Consolidation Test" (1729SM3)
- FENWICK, G. B.**  
Dsc (2271HY12) of "Hydraulic Models of the St. Lawrence Power Project" (2022HY5)
- FERGUSON, H. A.**  
"Hydraulic Investigations for the Delta Project" (1978WW1)
- FERGUSON, PHIL M.**  
Dsc (1952ST2) of "Design of Long Reinforced Concrete Columns" (1694ST4)
- FERNANDES, HENRIQUE GOMES**  
Dsc of 1740PO4: Armondo da Palma Carlos (2139PO4)
- FERNANDES, LUIS HENRIQUE**  
Dsc of 1747PO4: J. Barry Cooke (2013PO2)
- FERRELL, WILLIAM R. JR.**  
"Mountain Channel Treatment in Los Angeles County" (2242HY11)
- FERTIS, D. G.**  
Clo (2237ST8) to "Equivalent Systems for the Deflection of Variable Stiffness Members" (1802ST6)  
Dsc of 1820ST6: Perng-Fei Gou (2043ST5)
- FETZER, CLAUDE A.**  
Dsc (1953PO1) of "Rockfill Dams: Cogswell and San Gabriel Dams" (1687PO3) with Elton G. Knight
- FICKEL, H. H.**  
"Analysis of Curved Girders" (2164ST7)
- FIESENHEISER, E. I.**  
Dsc (1952ST2) of "Direct Design of Optimum Indeterminate Trusses" (1867ST8)
- FINALY, LOUIS**  
Dsc (1921SA1) of "Design Details for Individual Sewage Disposal Systems" (1715SA4)
- FINCH, JAMES KIP**  
Dsc (1987WW1) of "The Suez Canal—Its Chronicle and Bibliography" (1770WW4)
- FINZI, DANTE**  
"Underground Power Stations in Italy" (2289PO6) with Mario Mainardis and Carlo Semenza
- FISHER, GORDON P.**  
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- FISHER, JAMES C.**  
"A Boring Method for Pipeline Construction" (1907PL1)
- FLACK, J. ERNEST**  
Dsc (2179IR3) of "Upstream Irrigation Impact on Columbia River Flows" (1965IR1)
- FOCHT, JOHN A., JR.**  
Dsc (2011SM2) of "Glossary of Terms and Definitions in Soil Mechanics by the Committee on Glossary of Terms and Definitions in Soil Mechanics" (1826SM4)  
Dsc (2077SM3) of "Settlement of Oil Storage Tanks" (1863SM3)  
Dsc (2183SU1) of "Highway and Bridge Surveys: Preliminary Bridge Surveys" (1842SU3)
- FOK, D. Y.**  
Corr (2009ST4) to "On the Solution of Rigid Frames by the Column Analogy" (1914ST1)  
Dsc of 1914ST1: John Sherman (2075ST6)  
Dsc of 1914: J. J. Polivka (2152ST7)  
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- FONDAHL, JOHN W.**  
See Oglesby, C. H. (1959CO1)
- FRANCIS, A. J.**  
Dsc (2075ST6) of "Direct Design of Optimum Indeterminate Trusses" (1865ST8)
- FREITAG, DEAN R.**  
See Mitchell, James K. (2294SM6)
- FREUDENTHAL, ALFRED M.**  
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- FRIBERG, BENGT F.**  
Dsc (2007HW2) of "Reinforcement in Continuous Concrete Pavements" (1799HW3)  
Dsc (2180HW3) of "Tests of Concrete Pavements on Gravel Subbases" (1800HW3)
- FULKERSON, E. F.**  
Dsc of 1908PL1: Arthur L. Collins (2233PL3)  
"Gilsonite Solids Pipe Line" (1908PL1) with John E. Rinne
- GALAMBOS, THEODORE V.**  
"Columns Under Combined Bending and Thrusts" (1990EM2) with Robert L. Ketter  
Dsc of 1990EM2: George Winter (2234EM4)

- GAUL, ROY D.  
Clo (2011SM2) to "Model Study of a Dynamically Laterally Loaded Pile" (1535SM1)
- GAUS, MICHAEL P.  
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- GAZIS, D. C.  
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Corr (1922ST1) to "Analysis of Finite Beams on Elastic Foundation" (1722ST4)  
Dsc of 1722ST4: Andrew Reti, Alexander Dodge (1922ST1)
- GEERHARD, HAALJER  
Dsc of 1581EM2: P. P. Bijlaard (2008EM2)
- GEISSAL, PHILIP E.  
"Integrating the Airport into Metropolitan Planning" (2107AT3)
- GENTRY, R. C.  
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- GERRITSEN, F.  
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- GERSTLE, KURT H.  
Clo (1988ST3) to "Analysis of Braced Frames" (1560ST2)
- GESING, ERNEST J.  
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- GEUSS, ARTHUR P.  
Clo (2074PO3) to "Box Canyon Hydroelectric Project" (1672PO3)  
Dsc of 1672PO3: F. L. Lawton (1953PO1)
- GEYER, JOHN C.  
Dsc (2235HY10) of "Pressure Changes at Open Junctions in Conduits" (2057HY6)
- GHOSH, GAURCHANDRA  
Clo (1921SA1) to "Media Characteristics in Water Filtration" (1533SA1)
- GILL, NEAL F.  
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- GLAZE, C. K.  
"Vehicle Weight Phase of the Section 210 Study" (1928SA1)
- GLOGAU, O. A.  
Dsc (2237ST8) of "Analysis of a Two-Column Symmetrical Bents" (2037ST5)
- GLOSS, Ralph H.  
Dsc of 1913: E. George Stern (2152ST7)  
"Timber Fastenings" (1913ST1)
- GOEDJEN, MERLE H.  
"305,000 KW Extensions to the Fisk Steam Electric Station" (1948PO1) with Richard M. Collins and John P. Roche
- GOLDBERG, JOHN E.  
Clo (1952ST2) to "Lateral Load Analysis of Two-Column Bents" (1638ST3)
- GOLDING, BERNARD L.  
Dsc (2076HY6) of "Two Methods to Compute Water Surface Profiles" (1997HY4)
- GOLZE, ALFRED R.  
Dsc (1986IR2) of "Water—A Limiting Resource?" (1754IR3)
- GORDON, C. A.  
Clo (2098SA4) to "Municipal Composing in the United Kingdom" (1852SA6)  
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- GOSCHY, BELA  
Dsc (2075ST6) of "Shear Strength of Reinforced Concrete Beams" (1909ST1) with George Balazs
- GOU, PERNG-FEI  
Dsc (2043ST5) of "Generalization of the Successive Approximation Method" (1816ST6)  
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- GOULD, B. W.  
Dsc (2012HY4) of "Queuing Theory and Water Storage" (1811HY5)
- GRAINGER, FRANK A.  
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- GRANT, LELAND F.  
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- GRAVA, SIGURD  
"Standard Factories in Europe" (2330CP2)
- GRAY, ROBERT D.  
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- GREELEY, SAMUEL A.  
Dsc (1921SA1) of "Proposed Changes in Eastern Water Use Policies" (1777SA5)
- GREER, DAVID M.  
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- GRESKY, A. T.  
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- GRIFFIN, GUY E.  
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- GRIM, RALPH E.  
No closure notice (2325SM6) to "Physico-Chemical Properties of Soils: Clay Minerals" (1998SM2)  
Dsc of 1998SM2: Paul F. Kerr (2010SM2)  
"Physico-Chemical Properties of Soils: Clay Minerals" (1998SM2)
- GRINTER, L. E.  
Dsc of 1871PP1: V. L. Streeter (2042PP1)  
Dsc of 1871PP1: C. J. Posey, John E. Kiker, Jr., Lee H. Johnson (2185PP2)

- GRINTER, L. E.  
Dsc (2042PP1) of "Sputniks, Flopniks and Engineering Education" (1872PP1)
- GROSSWIRTH, MORRIS  
Dsc (2325SM6) of "Compressibility as the Basis for Soil Bearing Value" (2135SM4)
- GROWDON, JAMES P.  
Dsc of 1742PO4: F. L. Lawton, Waldo G. Bowman (2013PO2)  
Dsc of 1743PO4: Torald Mundal (2013PO2)  
Dsc of 1744PO4: F. L. Lawton (2013PO2)
- GUNNERSON, C. G.  
Clo (1921SA1) to "Sewage Disposal in Santa Monica Bay, California" (1534SA1)  
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- GURALNICK, SIDNEY A.  
Clo (2237ST8) to "Shear Strength of Reinforced Concrete Beams" (1909ST1)  
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- GUTTERMAN, B.  
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- GYOROG, D. A.  
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- HAALJER, G.  
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- HAAS, A. M.  
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- HABER, R. A.  
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- HADLEY, HOMER M.  
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- HALKIAS, N. A.  
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- HALL, EDWARD M.  
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- HALL, JAMES W.  
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- HAMLIN, N.  
Dsc (2045HY5) of "Wave Forces on Submerged Structures" (1833HY6)
- HAMMAD, H. Y.  
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- HAMMEL, LAWRENCE V.  
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- HANKINS, DORRIS  
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- HANSEN, NORMAN G.  
"Fatigue Tests of Joints of High Strength Steels" (1927ST3)
- HANSEN, VAUGHN E.  
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- HANSON, N. W.  
Dsc of 1818ST6: Homer M. Hadley (1922ST1)
- HARBECK, G. EARL, JR:  
Clo (1986IR2) to "Can Evaporation Losses be Reduced?" (1499IR1)  
"Digital Computers for Water Resources Investigations" (2244HY11) with W. L. Isherwood, Jr.
- HARDER, JAMES A.  
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- HARDIN, EUGENE A.  
Clo (1985SA2) to "Water Intakes in the Detroit River" (1592SA2)
- HARDING, S. T.  
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- HARR, M. E.  
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- HARRIS, D. LEE  
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- HARTFORD, C. W.  
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- HAUPT, L. M.  
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- HAVENNER, JOSEPH E.  
"Operational Aspects of Controlled Access Facilities" (1993HW2)
- HAZEN, RICHARD  
"Filter Plant Design" (2162SA5)
- HEDGER, HAROLD E.  
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- HELLER, CHARLES O.  
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- HERAK, JOHN P.  
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- HERBICH, JOHN B.  
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- HERROLD, GEORGE H.**  
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- HERSHLEDER, WILLIAM**  
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- HICKSON, ROBERT E.**  
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- HIGGINS, J. J.**  
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- HIGGINS, THEODORE R.**  
Dsc (2099EM3) of "Eccentrically Loaded, Hinged Steel Columns" (1792EM4)
- HOFFMAN, JAMES S.**  
Dsc (2043ST5) of "Design of Pier Bent and Rigid Frame by a Computer" (1854ST7)  
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- HOFFMAN, JOHN F.**  
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- HOFFMAN, LEWIS E.**  
Rt: "Regulation of Pipeline Design and Construction" Progress Report of the Task Committee on Investigation of Problems Involved in Regulation of Pipeline Design and Construction by Various Governmental Agencies of the Committee on Pipeline Design, Specifications and Operating Standards of the Pipeline Division (2025PL2)  
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- HOFFMASTER, BOB N.**  
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- HOGNESTAD, EIVIND**  
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- HOLDEN, OTTO**  
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- HOLMES, RAY E.**  
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- HOM, O. S.**  
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- HORIKAWA, KIYOSHI**  
"Present State of Coastal Engineering in Japan" (2169WW3)
- HORONJEFF, ROBERT**  
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- HORTON, CLARENCE REUBEN**  
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- HOSKIN, B. C.**  
"Flexible Surfaces on Viscoelastic Subgrades" (2195EM4) with E. H. Lee
- HOTES, FREDERICK L.**  
Dsc (2185PP2) of "Sputniks, Flopniks and Engineering Education" (1872PP1)
- HOUGH, B. K.**  
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- HOUGH, C. K.**  
Dsc of 2135SM4: Michael Praszker  
Morris Grosswirth (2325SM6)
- HOUGHTON, D. L.**  
"Field Study of Interior Temperatures in Concrete" (2207PO5)
- HOUSE, HAZEN ETNIER**  
See Pollard, Arthur Lewis (2312PO6)
- HOUSNER, G. W.**  
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- HOWARD, HENRY G.**  
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- HOWARD, HAYES M.**  
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- HRENNIKOFF, A.**  
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- HSU, HUAI-YUN**  
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- HUBBARD, S. R.**  
"Non-Steel Cylinder Prestressed Concrete Pipes" (2240PL3)
- HUBER, RICHARD M.**  
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- HUBER, WILLIAM G.**  
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- HUDOWALSKI, EDWARD C.  
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- HUDSON, ROBERT Y.  
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- HUEY, S. E.  
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- HUISMAN, L.  
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- HULL, C. H. J.  
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- HUME, NORMAN B.  
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- HUMPHREYS, HAROLD W.  
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- HUNSUCKER, W. A.  
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- HUNT, IRA A., JR.  
"Design of Seawalls and Breakwaters" (2172WW3)  
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- HUTCHINSON, RONALD L.  
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- HWANG, SHOI-YEAN  
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- IMEL, CHARLES E.  
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- INGERSOLL, ALFRED C.  
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- INGRAM, WILLIAM MARCUS  
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- IRELAND, E.  
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- IRISH, SUMNER B.  
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- ISHERWOOD, W. L., JR.  
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- ITO, RELJO  
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- IVEY, W. T.  
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- JACOBSEN, LYDIK S.  
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- JAEGER, CHARLES  
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- JAKOBSON, BERT  
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- JAMES, L. B.  
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- JOHNSON, C. A.  
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- JOHNSON, CORT T.  
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- JOHNSON, G. DUGAN  
Dsc (2238PO5) of "Hydraulics of Circulating Systems" (1946PO1)  
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- JOHNSON, HARVEY J.  
See Nelson, Martin E. (2097HY7)
- JOHNSON, J. W.  
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- JOHNSON, L. P.  
Dsc of 1879ST8: Giuliano Augusti, Tullio Renzulli, Emilio Rosenbluth, A. A. Eremin (2075ST6)
- JOHNSON, LEE H.  
Dsc (2185PP2) of "Importance of Emphasis in Civil Engineering Education" (1871PP1)
- JOHNSON, OLIVER A.  
"Application of Snow Hydrology to the Columbia Basin" (1904HY1) with Peter B. Boyer  
Dsc of 1904HY1: David H. Miller (2138HY8)
- JOHNSON, STANLEY J.  
Cio (2077SM3) to "Grouting with Cement Crouts" (1545SM1)
- JORDAN, MICHAEL  
Dsc (2237ST8) of "Analysis of a Two-Column Symmetrical Bents" (2037ST5)
- \*JULIAN, OLIVER G.  
Cio (1952ST2) to "Synopsis of First Progress Report of Committee on Factors of Safety" (1316ST4) with Alfred M. Freudenthal  
Dsc of 1316ST4: E. J. Ruble, Raymond Archibald (1952ST2)
- KANAREK, NAT T.  
"Cut-Off Points for Cover Plates" (2308ST10)
- KANDASWAMY, P. K.  
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- KAWASE, MASATOSHI  
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- KEIFER, CLINT J.**  
See Tholin, A. L. (1984SA2)
- KEIM, PAUL F.**  
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- KEITH, JAMES M.**  
See Blume, John A. (2170WW3)
- KELLER, F. G.**  
Corr (2186ST7) to "Self-Checking General Analysis of Rigid Frames with Sway" (1943ST2)  
Dsc of 1943ST2: J. J. Polivka (2186ST7)  
"Self-Checking General Analysis of Rigid Frames with Sway" (1943ST2)
- KELLER, JACK**  
Dsc of 2154IR3: M. Maasland (2327IR4)  
"Laboratory Research on Interceptor Drains" (2154IR3) with A. R. Robinson
- KENNEDY, THOMAS B.**  
Clo (2077SM3) to "Pressure Grouting Fine Fissures" (1731SM3)  
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- KENNEY, T. CAMMERON**  
Dsc (2077SM3) of "Geotechnical Properties of Glacial Lake Clays" (1732SM3)  
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- KERR, PAUL F.**  
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- KETTER, ROBERT L.**  
See Galambos, Therefore V. (1990EM2)
- KEULEGAN, G. H.**  
See McNown, J. S. (1894EM1)
- KIELY, J. R.**  
Dsc (1951SM1) of "Design and Performance of Vermilion Dam, California" (1726SM3)
- KIKER, JOHN E., JR.**  
Dsc (2185PP2) of "Importance of Emphasis in Civil Engineering Education" (1871PP1)
- KILCAWLEY, E. J.**  
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- KILLIN, EDWARD L.**  
Dsc of 1900HW1: Ming L. Pei (2180HW3)  
"Highway-Traffic Estimation by Linear Programming" (1900HW1)
- KIMBELL, RICHARD G., JR.**  
Dsc (1952ST2) of "The Factor of Safety in Design of Timber Structures" (1838ST7)
- KINDSVATER, CARL E.**  
Clo (1989HY3) to "Discharge Characteristics of Rectangular Thin-Plate Weirs" (1453HY6) with Rolland W. Carter
- KINNEY, JOHN W.**  
"Experience with High-Strength Belts in the Macinac Bridge" (1975ST3)
- KIRK, RANDALL W.**  
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- KIRPICH, PHILLIP Z.**  
"Flood Control Aspects of Cauca Valley Development" (2147HY3) with Carlos S. Ospina
- KLEIN, ALEXANDER**  
Clo (2011SM2) to "Cement and Clay Grouting of Foundations: The Use of Admixtures in Cement Grouts" (1547SM1) with Milos Polivka
- KNIGHT, ELTON G.**  
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- KOHL, JOHN C.**  
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- KOHLER, MAX A.**  
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- KOLB, C. R.**  
Clo (2011SM2) to "Mississippi Valley Geology—Its Engineering Significance" (1298SM3) with W. G. Shockley
- KOLF, R. C.**  
"The Vortex Chamber as an Automatic Flow-Control Device" (2310HY12) with P. B. Zielinski
- KOLLBRUNNER, CURT F.**  
"Steel Buildings and Fire Protection in Europe" (2264ST9)
- KRAVETZ, GLEBE A.**  
Clo (2011SM2) to "Cement and Clay Grouting of Foundations: The Use of Clay in Pressure Grouting" (1546SM1)
- KRIZ, LADISLAV B.**  
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- KRUEGER, RICHARD E.**  
"Multiple Purpose Powerplant Capacity" (2132PO4)
- KUCHENREUTHER, D. L.**  
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- KYLE, JOHN M., JR.**  
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- LABOON, J. F.**  
Clo (2098SA4) to "Controlled Submergence of Pittsburgh's Deep Sewage" (1717SA4)  
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- LAING, W. K.**  
Dsc (1916AT1) of "A Water-Borne Runway" (1658AT1)

- LAIRD, A. D. K.**  
 "Water Forces on Accelerated Cylinders"  
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- LAMBE, T. W.**  
 Dsc of 1654SM2: D. Hugh Trollope (1951SM1)  
 Dsc of 1655SM2: Jose a Jimenez Salas, D. Hugh Trollope (1951SM1)  
 Dsc of 2001SM2: A. A. Eremin (2236SM5)  
 "Physico-Chemical Properties of Soils: Role of Soil Technology" (2001SM2)
- LANCASTER, DALE M.**  
 "Hydraulic Characteristics of Hollow-Jet Valves" (2263HY11) with Robert B. Dexter
- LANGBEIN, W. B.**  
 Clo (2138HY8) to "Divining Rods vs. Hydrologic Data and Research" (1809HY5)  
 Clo (2138HY8) to "Queuing Theory and Water Storage" (1811HY5)  
 Dsc of 1809HY5: Ven Te Chow (1989HY3)  
 Dsc of 1809HY5: V. M. Yevjevich (2012HY4)  
 Dsc of 1811HY5: B. W. Gould (2012HY4)
- LARA, JOE M.**  
 Dsc of 1997HY4: Bernard L. Golding (2076HY6)  
 Dsc of 1997HY4: T. R. Anand (2138HY8)  
 Dsc of 1997HY4: R. Silvester (2182HY9)  
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 "Revised Computation of a Velocity Head Weighted Value" (2149HY9) with Kenneth B. Schroeder  
 "Two Methods to Compute Water Surface Profiles" (1997HY4) with Kenneth B. Schroeder
- LARSEN, WESLEY R.**  
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- LAURSEN, EMMETT M.**  
 Clo (198HY3) to "The Total Sediment Load of Streams" (1530HY1)  
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- LAUSHEY, LOUIS M.**  
 Clo (2261ST9) to "Direct Design of Optimum Indeterminate Trusses" (1867ST8)  
 Dsc of 1867ST8: E. I. Fiesenhiser (1952ST2)  
 Dsc of 1867ST8: R. W. Clough (2043ST5)  
 Dsc of 1867ST8: A. J. Francis (2075ST6)
- LAVERTY, B. R.**  
 Dsc (2011SM2) of "Design and Performance of Vermilion Dam, California" (1728SM3)
- LAVIK, O.**  
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- LAWTON, F. L.**  
 Dsc (1953PO1) of "Underground Power Plants in Canada" (1670PO3)  
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- LEDDICOTTE, GEORGE W.**  
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- LEE, E. H.**  
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- LEE, S. L.**  
 "Vierendeel Bents with Nonprismatic Members" (2321ST10) with F. P. Wiesinger
- LEISCH, JACK E.**  
 Clo (1918HW1) to "Adaptability of Interchange Types on Interstate System" (1525HW1)  
 "Spacing of Interchanges on Freeways in Urban Areas" (2277HW4)
- LEONARD, GEORGE K.**  
 Clo (2011SM2) to "Cement and Clay Grouting and Foundations: Experience of TVA with Clay Cement and Related Grouts" (1552SM1) with Leland F. Grant  
 Dsc (1953PO1) of "Rockfill Dams: Brownlee Sloping Core Dam" (1734PO4)  
 Dsc of 1736PO4: F. L. Lawton (2013PO2)
- LEONARDS, G. A.**  
 "Analysis of Concrete Slabs on Ground" (2064SM3) with Harr, M. E.
- LESLIE, GEORGE W.**  
 Clo (2040AT2) to "USAF Airfield Pavement Problems in the Jet Age" (1480AT2)
- LESLIE, JOHN WILLIAM**  
 Dsc (1987WW1) of "The Suez Canal—Its Chronicle and Bibliography" (1770WW4)
- LETOILE, H. A.**  
 Dsc of 1958CO1: Henry G. Howard (2178CO2)  
 "Engineering Education and the Construction Industry: Campus to Construction" (1958CO1)
- LEVY, ROY**  
 Dsc (2186ST7) of "Design Table for Steel Columns with Eccentric Loads" (2035ST5)

## LEWIS, HAROLD M.

Dsc of 2055CP1: R. A. Haber and W. J. Miller, Jr., George H. Herrold (2324CP2)  
"Freeways In Urban Planning" (2055CP1)

## LEWIS, M. R.

Dsc (2327IR4) of "Economic Evaluation of Water" (2059IR2)

## LI, C. Y.

"Construction Pore Pressures in an Earth Dam" (2213SM5)

## LI, SHU-T'EN

Clo (2184WW3) to "The Suez Canal—Its Chronicle and Bibliography" (1770WW4)

Dsc of 1770WW4: Woodland Gray Shockley, Raymond A. Wheeler, Frederick K. Morris, Jos. Millicam, James Kip Finch, John William Leslie, Paul A. Blanquet, R. L. Bostian, Jr., Tsung-Lien Chou, W. E. Potter, Arthur B. Cleaves (1987WW1)

Dsc (1987WW1) of "Scientific Developments in River Transportation" (1772WW4)

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## LICHTFELD, H. J.

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## LINDVALL, FREDERICK C.

Dsc of 1869PP1: Henry G. Howard (2185PP2)  
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## LIPPOLD, FRED H.

Clo (2077SM3) to "Cement and Clay Grouting of Foundations: Pressure Grouting with Packers" (1549SM1)

## LITZ, G. MARVIN

Dsc (237IR4) of "Monthly Consumptive Use Requirements for Irrigated Crops" (1963IR1)

## LIU, HSIN-KUAN

"Discharge Formula for Straight Alluvial Channels" (2260HY11) with Shoi-Yean Hwang

## LLOYD, H. E.

Clo (2238PO5) to "Rockfill Dams: Cherry Valley Central Core Dam" (1733PO4)  
Dsc of 1733PO4: Joseph C. Dodd (1953PO1)  
Dsc of 1733PO4: F. L. Lawton (2013PO2)

## LOBDELL, HERBERT L.

"Rate of Constructing Embankments on Soft Foundation Soils" (2214SM5)

## LOCKETT, JOHN B.

Clo (2271HY12) to "Interim Consideration of the Columbia River Entrance" (1902HY1)  
Dsc of 1902HY1: R. E. Hickson (2138HY8)  
"Interim Consideration of the Columbia River Entrance"

## LOGAN, JOHN ALEXANDER

Dsc (2072CP1) of "City Planning Education for the Civil Engineer, by the Committee on Education of the City Planning Division" (1877CP2)

## LOUNT, A. M.

"Computer Design of a Multistory Frame Building" (2322ST10)

## LOVELAGE, ELDRIDGE H.

"Coordinating Public Works and Urban Renewal in Kansas City, Kansas" (2307CP2) with Ramon Duran

## LOW, PHILIP F.

Dsc (2010SM2) of "Physico-Chemical Properties of Soils: Ion Exchange Phenomena" (1999SM2)

## LU, ZUNG-AN

See Vasarhelyi, Desi D. (1973ST3)

## LUND, C. V.

"Timber Bridges on the Railways" (1912ST1)

## LUNDQUIST, E. C.

See Gyorog, D. A. (2019HY5)

## LUTHIN, J. N.

See Scott, Verne H. (1966IR1)

## LUXFORD, R. F.

Clo (2152ST7) to "Light Wood Trusses" (1839ST7)  
Dsc of 1839ST7: E. George Stern (1952ST2)

## LYON, WALTER A.

"Salaries of Local Environmental Health Personnel in 1956 Report of the Committee on Salaries Conference of Municipal Public Health Engineers" (2268SA6)

## MAAR, C. R.

See Winkelamn, D. W. (1954CO1)

## MAASLAND, M.

Dsc (2327IR4) of "Laboratory Research on Interceptor Drains" (2154IR3)  
Dsc (2327IR4) of "Aquifer Tests in the Snake River Basalt" (2156IR3)  
Dsc (2327IR4) of "Drainage in the Coachella Valley of California" (2158IR3)  
"Measurement of the Permeability of Tri-Axially Anisotropic Soil" (2063SM3)

## MACAGNO, ENZO OSCAR

Dsc (2099EM3) of "Simplification of Dimensional Analysis" (1898EM1)

## MacDONALD, D. H.

See Patterson, F. W.

## MacFARLANE, IVAN C.

Dsc of 1937SM1: T. Cameron Kenney, E. J. Zagarra (2077SM3)  
"A Review of the Engineering Characteristics of Peat" (1937SM1)

## MacGREGOR, J. G.

Dsc (1952ST2) of "Design of Long Reinforced Concrete Columns" (1694ST4) with C. P. Siess  
Dsc (2237ST8) of "Design of Long Reinforced Concrete Columns" (1694ST4)

## MacLEAN, D. J.

Dsc (2180HW3) of "Early Soil-Cement Research and Development" (1899HW1)

## MADISON, RONALD B.

See Vasarhelyi, Desi D. (1973ST3)

## MAINARDIS, MARIO

See Finzi, Dante (2289PO6)

- MALTER, HENRY**  
Clo (1952ST2) to "Numerical Solutions for Beams on Elastic Foundations" (1562ST2)  
Dsc of 1815ST6: Dronnadula V. Reddy (2009ST4)
- MANSUR, C. I.**  
See Turnbull, W. J. (2296SM6)  
See Turnbull, W. J. (2136SM4)  
See Turnbull, W. J. (2217SM5)
- MARCELLO, CLAUDIO**  
Clo (1953PO1) to "Underground Power Houses in Italy and other Countries" (1554PO1)
- MARINER, L. T.**  
"Ocean Cooling Water Systems For Two Thermal Plants" (2133PO4) with W. A. Hunsucker
- MARSH, CEDRIC**  
"The Rapid Design of Beams in Torsion" (1923EM1)
- MARTIN, HARRISON A.**  
Clo (2044SA3) to "Design Detail for Individual Sewage Disposal Systems" (1715SA4)  
Dsc of 1715SA4: Louis Finaly (1921SA1)
- MASON, RICHARD E.**  
Clo (2099EM3) to "Eccentrically Loaded, Hinged Steel Columns" (1792EM4) with Gordon P. Fisher, and George Winter  
Dsc of 1792EM4: Theodore R. Higgins (2099EM3)
- MASSONNET, CHARLES**  
"Stability Considerations in the Design of Steel Columns" (2163ST7)
- MASTERS, ALBERT G.**  
"Raising Transmission Towers with Energized Lines" (2208PO5) with Ernest J. Gesing
- MATTHEWS, A. T.**  
Dsc (1917EM1) of "Dynamic Elasto-Plastic Response of Rigid Frames" (1693EM3)
- MATTHEWS, JOHN H.**  
Dsc (2072CP1) of "City Planning Education for the Civil Engineer, by the Committee on Education of the City Planning Division" (1877CP2)
- MAVIS, F. T.**  
Dsc (2152ST7) of "Elastic Resistance of Reinforced Concrete" (1878ST8)
- MAY, ADOLPH D., JR.**  
"Characteristics of Traffic Flow on Freeways" (2273HW4)
- MAYER, ARMAND**  
Clo (1951SM1) to "Cement and Clay Grouting of Foundations: French Grouting Practice" (1550SM1)
- MAYER, PAUL G.**  
Dsc of 2085HY7: F. F. Escoffier (2271HY12)  
"Roll Waves and Slug Flow in Inclined Open Channels" (2085HY7)
- MECHEL, B.**  
See Pariset, E. (2097HY7)
- MELLINGER, F. M.**  
"Pavement Design for Commercial Jet Aircraft" (2016AT2) with R. G. Ahlvin and P. F. Carlton
- MERCHANT, IVAN D.**  
"Construction of the Columbia River (Portland-Vancouver) Bridges" (2143CO2)
- MERZ, ROBERT C.**  
"Waste Water Reclamation for Golf Course Irrigation" (2252SA6)
- MERZWEILER, J. M.**  
Dsc (2232AT4) of "Meeting U.S.A.F. Blast Fence Requirements" (1892AT1)
- METCALF, LAURENCE R.**  
See Webster, Marvin J. (2148HY9)
- MEYER, ADOLF A.**  
Dsc (2238PO5) of "High-Lift Construction Methods for Mass Concrete" (2061PO3)
- MEYER, OTTO H.**  
Clo (2236SM5) to "Computation of the Stability of Slopes" (1824SM4)  
Dsc of 1824SM4: G. S. Sarkaria and N. L. Worth (2011SM2)  
Dsc of 1824SM4: Marcel Bitoun (2077SM3)
- MEYERHOF, G. G.**  
"Compaction of Sands and Bearing Capacity of Piles" (2292SM6)
- MICHAELS, ALAN S.**  
Dsc (2010SM2) of "Physico-Chemical Properties of Soils: Soil Water Systems" (2000SM2)
- MILES, HENRY J.**  
Dsc (2182HY9) of "Relationships Between Pipe Resistance Formulas" (1962HY3)
- MILLECAM, JOS.**  
Dsc (1987WW1) of "The Suez Canal—Its Chronicle and Bibliography" (1770WW4)
- MILLER, ALFRED L.**  
Dsc (1922ST1) of "Earthquake Design Criteria for Stack-Like Structures" (1696ST4)
- MILLER, DAVID H.**  
Dsc (2138HY8) of "Application of Snow Hydrology to the Columbia Basin" (1904HY1)
- MILLER, HAROLD R.**  
"Approach and Runway Lighting as Viewed by the Air Line Pilot" (2122AT3)
- MILLER, J. F.**  
See Paulhus, J. L. H. (1950HY2)
- MILNE, JOHN B.**  
Dsc (1953PO1) of "Underground Power Plants in Scotland" (1675PO3)
- MIRZA, SHAUKAT**  
Dsc (2075ST6) of "Review of Limit Design for Structural Concrete" (1878ST8)
- MITCHELL, JAMES K.**  
"A Review and Evaluation of Soil-Cement Pavements" (2294SM6) with Dean R. Freitag
- MIZUKOSHI, TATSUO**  
Clo (1953PO1) to "The Sudagai Underground Power Plant, Japan" (1555PO1)  
Dsc (2013PO2) of "Rockfill Dams: Salt Springs and Lower Bear River Concrete Face Dams" (1737PO4)

- MOELLER, DADE W.  
"Radionuclides in Reactor Cooling Water"  
(1968SA2) with George W. Leddicotte, and Sam A. Reynolds
- MOGG, JOE L.  
"Effect of Aquifer Turbulence on Well Draw-down" (2265HY11)
- MOLIOTIS, PANAGIOTIS D.  
Clo (2075ST6) to "A Method of Design of Reinforced Concrete Section" (1509ST1)  
Clo (2237ST8) to "Generalization of the Successive Approximation Method" (1816ST6)  
Dsc of 1816ST6: Peeng-Fei Gou (2043ST5)
- MOLKE, ERIC  
"Prestressed Concrete Pavements" (2119AT3)
- MONROE, ROBERT A.  
"Addition to Generating Capacity at Wilson Dam" (2209PO5)
- MOOR, HERMAN L.  
Dsc (1951SM1) of "Pressure Grouting Fine Fissures" (1931SM3)
- MOORE, CHARLIE M.  
"Performance of Flood Prevention Works During the 1957 Floods" (2201HY10)
- MOORE, HERBERT  
Dsc (1985SA2) of "Planning the Future of Chicago's Water System" (1782SA5)  
Dsc (1921SA1) of "SED Research Report No. 19: Sewage Treatment by Lagoons" (1678SA3)
- MOORE, WALTER L.  
Clo (1950HY2) to "The Hydraulic Jump at an Abrupt Drop" (1449HY6) with Carl W. Morgan  
"Relationships Between Pipe Resistance Formulas" (1926HY3)  
Dsc of 1962HY3: Peter Ackers (2097HY7)  
Dsc of 1962HY3: K. Szesztay, Henry J. Miles, M. B. McPherson, Nicholas Bilonok, J. V. Dawsey (2182HY9)
- MORAN, D. F.  
Clo (2152ST7) to "Earthquake Response of Elevated Tanks and Vessels" (1563ST2) with J. A. Cheney
- MORGAN, CARL W.  
See Moore, Walter L. (1950HY2)
- MORRIS, FREDERICK K.  
Dsc (1987WW1) of "The Suez Canal—Its Chronicle and Bibliography" (1770WW4)
- MORRIS, HENRY M.  
"Design Methods for Flow in Rough Conduits" (2081HY7)
- MORRIS, SAMUEL B.  
Clo (1986IR2) to "Resolving Conflicting Demands for Water" (1501IR1)
- MORTON, F. I.  
"Hydrology of Lake Ontario" (2017HY5) with H. B. Rosenberg
- MORTON, ROY J.  
See Cowser, K. E. (2033SA3)
- MUIR, J. F.  
Dsc of 1947PO1: W. S. McIlquham, G. Dugan Johnson (2238PO5)  
"Passage of Young Fish Through Turbines" (1947PO1)
- MUNDAL, TORALD  
Dsc of 1734PO4: George K. Leonard (1953PO1)  
Dsc of 1734PO4: F. L. Lawton, Hual-yun Hsu, Reijo Ito (2013PO2)  
Dsc of 1734PO4: G. H. Condit (2328PO6)  
Dsc (2013PO2) of "Rockfill Dams: Dams with Sloping Earth Cores" (1743PO4)
- MUNSE, W. H.  
"Behavior of Riveted and Bolted Beam-To-Column Connections" (1971ST3) with W. G. Bell, and E. Chesson, Jr.  
Dsc of 1970ST3: Richard T. Douty (2186ST7)  
Dsc of 1970ST3: W. R. Penman and E. F. Ball (2237ST8)  
Dsc (2186ST7) of "Installation and Tightening of High-Strength Bolts" (1974ST3)  
"Strength of Rivets and Bolts in Tension" (1970ST3) with K. S. Petersen, and E. Chesson, Jr.
- MUNSON, WENDELL C.  
Dsc (232TIR4) of "Monthly Consumptive Use Requirements for Irrigated Crops" (1963IR1)
- MURPHY, M. J.  
Dsc (1988ST3) of "Structural Dynamics in Earthquake-Resistant Design" (1695ST4) with R. I. Skinner, and K. M. Adams  
See Bycroft, G. N. (2197EM4)
- McBIRNEY, WARREN  
Dsc of 1807HY5: Fred W. Blaisdell and Harold W. Humphreys (2012HY4)
- McCAIG, I. W.  
See McQueen, A. W. F.  
See Patterson, F. W. (1953PO1)
- McCLELLAN, T. J.  
Clo (1952ST2) to "Specifications for Preservative Treatment of Timber: Progress Report of a Subcommittee of the Committee on Timber Structures" (1637ST3)
- McCOY, PETER J.  
"The Thos. H. Allen Electric Generating Station" (2131PO4) with Vincent Shamamian
- McCULLOUGH, CHARLES A.  
See Willets, David B. (1986IR2)
- McDERMOTT, JAMES H.  
See Sinkoff, Morton D. (2251SA6)
- McDONALD, WALTER E.  
"Deep-Draft Navigation on the Great Lakes" (2298WW3)
- McGAUHEY, P. H.  
Dsc of 2059IR2: M. R. Lewis, Robert O. Thomas, S. T. Harding (2327IR4)  
"Economic Evaluation of Water" (2059IR2) with Harry Erlich
- McILQUHAM, W. S.  
Dsc (2238PO5) of "Passage of Young Fish Through Turbines" (1947PO1)



- McKEE, J. E.  
 Dsc of 1870PP1: V. L. Streeter (2042PP1)  
 Dsc of 1870PP1: Frank A. Butrico (2185PP2)  
 Dsc of 1870PP1: Hotten A. Elleby (2185PP2)
- McLAUGHLIN, RONALD T.  
 "The Settling Properties of Suspensions"  
 (2311HY12)
- McLENNAN, WILFRED G.  
 "An Approach to the Study of Overseas Traffic Potentials" (2300WW3)
- McNEILL, R. L.  
 See Seed, H. B. (2011SM2)
- McNOWN, JOHN S.  
 Dsc (1952ST2) of "Wind Forces on Structures: Fundamental Considerations" (1709ST4) with Dorris Hankins  
 "Vortex Formation and Resistance in Periodic Motion" (1894EM1) with G. H. Keulegan
- McPHERSON, M. B.  
 Clo (1989HY3) to "Water Distribution Design and the McIlroy Network Analyzer" (1588HY2) with J. V. Radziul  
 Corr (2044SA3) to dsc (1985SA2) of "Resistance of Sewage Sludge to Flow in Pipes" (1780SA5)  
 Dsc (1920PL1) of "Water Distribution Problems Solved by Network Calculators" (1577PL1) with J. V. Radziul  
 Dsc (1985SA2) of "Resistance of Sewage Sludge to Flow in Pipes" (1780SA5)  
 Dsc (2181SA5) of "The Hydrology of Urban Runoff" (1984SA2)  
 Dsc (2182HY9) of "Relationships Between Pipe Resistance Formulas" (1962HY3)
- McQUEEN, A. W. F.  
 Clo (2139PO4) to "Underground Power Plants in Canada" (1670PO3) with C. N. Simpson and I. W. McCaig  
 Dsc of 1670PO3: F. L. Lawton (1953PO1)
- NAGARATNAM, S.  
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- NEIHEISEL, JAMES  
 "Littoral Drift in Vicinity of Charleston Harbor" (2070WW2)
- NELIDOV, IVAN M.  
 Dsc (2152ST7) of "Design of Pitched Curved Timber Diaphragms" (1911ST1)
- NELSON, FREDERICK G.  
 "New Developments in Sewage Sludge Treatment" (2246SA6) with William E. Budd
- NELSON, HAROLD T.  
 Dsc of 1965IR1: F. Ernest Flack (2179IR3)  
 Dsc of 1965IR1: Raphael G. Kazmann (2073IR2)  
 "Upstream Irrigation Impact on Columbia River Flows" (1965IR1)
- NELSON, MARTIN E.  
 Clo (2097HY7) to "Eisenhower and Grass River Lock Models" (1582HY2) with Harvey J. Johnson
- NEMEROW, N. L., Chmn.  
 Clo (2098SA4) to "SED Research Report No. 19 Sewage Treatment by Lagoons, by the Sanitary Engineering Research Committee, Sewage Treatment Section" (1678SA3)  
 Dsc of 1678SA3: Herbert Moore (1921SA1)  
 "Evaluation of Education and Research in Solid Wastes Engineering Twenty-Fourth Report of the Committee on Sanitary Engineering Research of the Sanitary Engineering Division" (2248SA6)  
 "Metropolitan Section, ASCE, Seminar on Sanitary Engineering Research Twenty-Fifth Progress Report of the Committee on Sanitary Engineering Research of the Sanitary Engineering Division" (2249SA6)  
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- NEWBERG, J. F.  
 Dsc (1619AT1) of "Airport Approach, Runway and Taxiway Lighting Systems" (1659AT1)
- NEWMARK, NATHAN M.  
 "A Method of Computation for Structural Dynamics" (2094EM3)
- NEWTON, C. T.  
 "Los Angeles County Flood Control and Water Conservation" (2069WW2) with Harold E. Hedger
- NILAND, J. J.  
 "Design of the Shippingport Reactor Plant Containter" (2258ST9)
- NOMICOS, GEORGE N.  
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- NUNN, BEN E.  
 "Auto Parking for Efficiency and Revenue at Airports" (2110AT3)
- O'BRIEN, J. T.  
 Clo (2078WW2) to "Forces Induced on a Large Vessel by Surge" (1571WW2) with D. I. Kuchenreuther  
 Corr to dsc (1884WW5) of 1571WW2: Basil W. Wilson (1987WW1)
- O'DONNELL, JAMES P.  
 "Aircraft Fueling Systems for Jets" (2104AT3)
- OGLESBY, C. H.  
 Dsc of 1959CO1: Theodore B. Appel, Jr., Paul F. Kelm, Henry G. Howard (2178CO2)  
 "Engineering Education and the Construction Industry: What the Industry should have from the Colleges" (1959CO1) with John W. Fondahl
- OJALVO, MORRIS  
 Dsc (2261ST9) of "The Plastic Method of Designing Steel Structures" (2005ST4)
- OLDENBURGER, RUFUS  
 Dsc (2235HY10) of "Hydraulic Analysis of Surge Tanks by Digital Computer (1996HY4)
- ORLOB, GERALD T.  
 "Eddy Diffusion in Homogeneous Turbulence" (2150HY9)

- OSPINA, CARLOS S.  
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- PAGON, WATERS W.  
Clo (2152ST7) to "Wind Forces on Structures: Plate Girders and Trusses" (1711ST4)  
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Dsc of 1711ST4: C. Scruton, Henri Perrin (1988ST3)
- PANNELL, FREDERICK NORMAN  
Dsc (2075ST6) of "Biaxially Loaded Reinforced Concrete Columns" (1865ST8)
- PARISET, E.  
Dsc (2097HY7) of "Problems Concerning Use of Low Head Radial Gates" (1935HY2) with B. Michel
- PARISI, PAUL A.  
Dsc (2011SM2) of "Glossary of Terms and Definitions in Soil Mechanics by the Committee on Glossary of Terms and Definitions in Soil Mechanics" (1826SM4)
- PARSONS, JAMES D.  
"Foundation Installation Requiring Recharging of Ground Water" (2141CO2)
- PATTERSON, F. W.  
Clo (2139PO4) to "Rockfill Dams: The Bersimis Sloping Core Dams" (1740PO4) See MacDonald, D. H.  
Clo (1953PO1) to "Design of Large Pressure Conduits in Rock" (1457PO6) with R. L. Clinch and I. W. McCaig  
Dsc of 1740PO4: F. L. Lawton (1953PO1)
- PAULHUS, J. L. H.  
Clo (1950HY2) to "Flood Frequencies Derived from Rainfall Data" (1451HY6) with J. F. Miller  
Dsc (1969HY3) of "Synthetic Flood Frequency" (1808HY5)
- PEDERSEN, GUNNAR S.  
"Compressive Strength of Compacted Snow" (1893AT1)
- PEI, MING L.  
Corr (2329ST10) to "Matrix Solution of Beams with Variable Moments" (2218ST8)  
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- PENMAN, W. R.  
Dsc (2237ST8) of "Strength of Rivets and Bolts in Tension" (1970ST3)
- PENROD, E. B.  
Clo (1951SM1) to "A Method to Describe Soil Temperature Variation" (1537SM1) with W. W. Walton and D. V. Terrell
- PERKINS, PHILIP H.  
Dsc (2044SA3) of "Municipal Composting in the United Kingdom" (1852SA6)
- PERREY, JOSEPH I.  
"Suggested Legislation on Flood Plain Regulation" (2315HY12)
- PERRIN, HENRY  
Dsc (1988ST3) of "Wind Forces on Structures: Nature of the Wind" (1708ST4)  
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- PETERKA, A. J.  
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- PETERSON, K. S.  
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- PETERSON, WILLIAM C.  
Dsc (2269HY11) of "Two Methods to Compute Water-Surface Profiles" (1997HY4)
- PETTIT, CHARLES G.  
"20 Years of Sewage Sludge Burning at Barber-ton, Ohio" (2247SA6)
- PHILLIPS, ARIS  
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- PICHLER, ERNESTO  
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- PIHLAINEN, J. A.  
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- PINCUS, HOWARD J.  
"Type Features of the Ohio Shoreline of Lake Erie" (2297WW3)
- PISTER, K. S.  
"Elastic Bending of Layered Plates" (2194EM4) with S. B. Dong
- POCOCK, J. W.  
"The Pattern of Future Air Travel Demands" (2105AT3)
- POLIVKA, J. J.  
Dsc (2152ST7) of "On the Solution of Rigid Frames by the Column Analogy" (1914ST1)  
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Dsc (2261ST9) of "Analysis of Two-Column Symmetrical Bents" (2037ST5)
- POLIVKA, MILOS  
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- POLLARD, ARTHUR LEWIS  
"An Unusual Deposit in a Hydraulic Tunnel" (2312PO6) with Hazen Etnier House
- POPE, ROBERT J.  
Clo (2238PO5) to "Rockfill Dams—The Dalles Closure Dam" (1738PO4)  
Dsc of 1738PO4: F. L. Lawton (2013PO2)

- PORGES, RALPH**  
 See Sinkoff, Morton D. (2251SA6)
- PORTER, HARRIS C.**  
 Dsc (1953PO1) of "Rockfill Dams: Cogswell and San Gabriel Dams" (1687PO3)
- POSEY, C. J.**  
 Dsc (2185PP2) of "Importance of Emphasis in Civil Engineering Education" (1871PP1)  
 See Powell, Ralph W. (2018HY5)
- POSNER, HARRY**  
 Clo (1952ST2) to "Moments in Restrained or Continuous Beams by the Method of Partial Moments" (1567ST2)
- POTTER, W. E.**  
 Dsc (1987WW1) of "The Suez Canal—Its Chronicle and Bibliography" (1770WW4)
- POWELL, R. W.**  
 Dsc of 2018HY5: Peter Ackers (2269HY11)  
 Dsc of 2018HY5: J. Van Malde (2271HY12)  
 "Resistance Experiments in a Triangular Channel" (2018HY5) with Chesley J. Posey
- PRASZKER, MICHAEL**  
 Dsc (2325SM6) of "Compressibility as the Basis for Soil Bearing Value" (2135SM4)
- PURDUE, A. G.**  
 "Thermal Electric Pipeline for High-Viscosity Fuel" (2038PL2)
- QUACKENBUSH, T. H.**  
 "Storage for Irrigation Water in Humid Areas" (2155IR3)
- RADER, LLOYD**  
 Dsc of 1877CP2: John H. Matthews, John Alexander Logan (2072CP1)
- RADZIUL, J. V.**  
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- RAINVILLE, W. S., JR.**  
 "Trends in Public Transit Improvement Programs" (2272CP2)
- RAMEY, HORACE P.**  
 "Storm Water Drainage in the Chicago Area" (1995HY4)
- RANZ, W. E.**  
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- REDDY, DRONNADULA V.**  
 Dsc (2009ST4) of "Numerical Solutions for Interconnected Bridge Girders" (1815ST6)
- REEVES, A. B.**  
 Clo (2011SM2) to "Geological Factors in Tunnel Construction: Geology and Tunnel Design" (1649SM2)
- REISMAN, ARNOLD**  
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- REYNOLDS, SAM A.**  
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- RHONE, THOMAS J.**  
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- RICHARDS, R. T.**  
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- RICHTER, RAYMOND C.**  
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- RIDDICK, THOMAS M.**  
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- RIGGS, H. C.**  
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- ROBBINS, PAUL H.**  
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- ROBECK, GORDON G.**  
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- ROBERTS, C. M.  
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- ROCHE, JOHN P.  
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- ROCKWOOD, DAVID M.  
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- ROGGIERO, CORRADO  
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- ROSENBLUETH, EMILIO  
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- ROUSE, HUNTER  
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- ROWE, R. ROBINSON  
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- RUBLE, E. J.  
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- RUDDY, JOHN M.  
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- SAKURAI, S.  
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- SALAS, JOSE A. JIMENEZ  
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- SALE, JAMES P.  
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- SALVADORI, MARIO G.  
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- SARKARIA, G. S.  
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- SARPKAYA, TURGUT  
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- SAWYER, HERBERT A., JR.  
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- SCAROLA, J. A.  
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- SCHEIDENHELM, F. W.  
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- SCHIFFMAN, ROBERT L.  
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- SCHIJF, J. B.  
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- SCHJODT, R.  
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- SCHMIDT, LEWIS A., JR.  
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- SCHMIDT, MILTON O.  
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- SCHMITZ, EWALD  
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- SCHOMAKER, JOHN F.  
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- SCHRIEVER, W. R.  
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- SCHUREMAN, L. R.  
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- SCOTT, G. R.  
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- SCOTT, RONALD F.  
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- SCOTT, VERNE H.  
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- SCRUTON, C.  
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- SEED, H. B.  
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- SELBO, M. L.  
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- SHEA, PAUL H.  
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- SHELTON, M. J.  
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- SHERARD, J. L.  
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- SHERMAN, JOHN  
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- SHOCKLEY, DELL G.  
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- SISS, C. P.  
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- SILVEIRA, ICARAHY da  
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- SILVESTER, R.  
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- SINGELL, THOMAS W.  
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ling Filter" (2251SA6) with Ralph Porges, and  
James H. McDermott  
Dsc of 1850SA6: Russell H. Babcock (1985SA2)
- SKINNER, R. I.  
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- SMERDON, ERNEST T.  
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- SMITH, A. W.  
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- SMITH, R. W.  
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- SMITH, RICHARD A.  
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- SNETHLAGE, JOHN B.  
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- SNODGRASS, J. D.  
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- SNYDER, C. M.  
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- SNYDER, FRANKLIN F.  
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- STEELE, I. C.  
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- STETSON, THOMAS M.  
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- STOUT, GLENN E.  
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- SWIGER, W. F.  
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- SWIHART, G. R.  
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- SZESZTAY, K.  
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- SZILARD, RUDOLPH  
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- TAUBER, SELMO  
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- TAYLOR, A. W.  
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- TERZAGHI, K.  
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- THAWLEY, THOMAS  
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- THOLIN, A. L.  
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- THORNBURN, THOMAS H.  
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- THURBER, PAUL  
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- TODD, DAVID K.  
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- TOWNE, W. W.  
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- TOWNSEND, CHARLES L.  
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Dsc of 1942ST2: A. A. Eremin (2186ST7)  
Dsc of 2065ST6: Ming L. Pei (2261ST9)
- TUCKER, LT. COL. TEMPLE A.  
Dsc of 1892AT1: J. M. Merzweiler and C. A. Anderson  
"Meeting USAF Blast Fence Requirements" (1892AT1)
- TUEMMLER, FRED W.  
"Urban Expressways: Work of Highway and Planning Agencies" (2050CP1)
- TUMA, JAN J.  
"Analysis of Continuous Trusses by Carry-Over Moments" (2314ST10)
- TUNG, CHARLES P. C.  
Clo (2237ST8) to "Design of Pier Bent and Rigid Frame by a Computer" (1854ST7)  
Dsc of 1854ST7: Glen V. Berg (1952ST2)  
Dsc of 1854ST7: James S. Hoffman (2043ST5)
- TURNBULL, W. J.  
"Construction and Maintenance of Underseepage Control Measures" with C. I. Mansur  
"Design of Underseepage Control Measures for Dams and Levees" (2217SM5) with Mansur, C. I.  
"Investigation of Underseepage—Mississippi River Levees" (2136SM4) with C. I. Mansur
- TURNER, HOWARD M.  
Dsc (1985SA2) of "Proposed Changes in Eastern Water Use Policies" (1777SA5)
- UPSON, JOSEPH E.  
Dsc of 2056HY6: C. Blemond (2271HY12)  
Dsc of 2056HY6: Robert O. Thomas (2269HY11)  
"Ground-Water Problems In New York and New England" (2056HY6)
- VAN EENAM, NEIL  
See Erickson, Eric L. (1988ST3)
- VAN MALDE, J.  
Dsc (2271HY12) of "Resistance Experiments in a Triangular Channel" (2018HY5)
- VAN TUYL, DONALD W., Chmn.  
"An Engineering Appraisal of Hydrologic Data: Progress Report of the Task Group of Hydrologic Data of the Committee on Hydrology of the Hydraulics Division" (2079HY7)
- VANONI, VITO A.  
Dsc of 2020HY5: Emmett M. Laursen (2269HY11)  
Dsc of 2020HY5: Tsung-Lien Chou, D. B. Simons and E. V. Richardson (2271HY12)  
"Resistance Properties of Sediment-Laden Streams" (2020HY5) with George N. Nomicos

- VASHARHELYI, DESI D.  
 "Effects of Fabrication Techniques on Bolted Joints" (1973ST3) with Said Y. Beano, Ronald B. Madison, Zung-An Lu, and Umesh C. Vasishth
- VASISHTH, UMESH C.  
 See Vasarhelyi, Desi D. (1973ST3)
- VEERLING, JOHN P.  
 "Runway Lighting—New York International Airport" (2121AT3)
- VELZ, C. J.  
 "Industrial Waste Disposal Tailored to Stream Flow" (2254SA6)
- VICARIOT, HENRI  
 "Paris-Orly Airport and Its New Terminal Area" (2125AT3)
- VICKERS, CHARLES L., JR.  
 See Hoffmaster, Bob N. (2303WW3)
- VIEST, I. M.  
 See Broms, Bengt (1922ST1)
- VINCENT, GEORGE S.  
 "Correlation of Predicted and Observed Suspension Bridge Behavior" (1944ST2)  
 Dsc of 1817ST6: Louis Balog (2152ST7)  
 Dsc of 1944ST2: F. B. Farquharson (1952ST2)
- VINCENZ, JEAN L.  
 "Problems of County and Municipal Engineers in Civil Service" (2029PP1)
- VIPARELLI, MICHELE  
 Dsc (2076HY6) of "Experiments on Self-Aerated Flow in Open Channel" (1890HY7)
- VOLTERRA, E.  
 "On Longitudinal Waves in an Elastic Plate" (1896EM1) with E. C. Zachmanoglou
- VON WILICH, GIDEON P. R.  
 Clo (2234EM4) to "The Elastic Stability of Thin Spherical Shells" (1897EM1)  
 Dsc of 1897EM1: Wen Liang Chen (2008EM2)  
 "The Stability of Thin Spherical Shells" (1897EM1)
- VOORHEES, ALAN M.  
 "Use of Mathematical Models in Estimating Travel" (2280HW4)
- VORLICEK, MILOS  
 Dsc (2043ST5) of "The Factor of Safety in Design of Timber Structures" (1838ST7)
- WALKER, G. E.  
 Dsc (2044SA3) of "Sleuthing the Behavior of a River" (1847SA6)
- WALKER, R. W.  
 See Laird, A. D. K. (1982WW1)
- WALL, ROBERT F.  
 "Ground Transportation" (2109AT3)
- WALTER, E. EDWARD  
 Dsc of 1659AT1: J. F. Newberg (1916AT1)
- WALTON, W. C.  
 "Aquifer Tests in the Snake River Basalt" (2156IR3) with J. W. Stewart  
 Dsc of 2156IR3: M. Maasland (2327IR4)
- WALTON, W. W.  
 See Penrod, E. B. (1951SM1)
- WANG, CHU-KIA  
 Clo (2152ST7) to "Matrix Formulation of Slope-Deflection Equations" (1819ST6)  
 Dsc of 1819ST6: Ming L. Pei (2043ST5)  
 "Matrix Analysis of Statically Indeterminate Trusses" (2003ST4)
- WARD, JACK W.  
 See Taylor, E. H. (1933HY2)
- WARNER, ROBERT F.  
 Dsc (2075ST6) of "Shear Strength of Reinforced Concrete Beams" (1909ST1)
- WARSKOW, M. A.  
 "Jet Airport Lighting Requirements" (2193AT4) by M. A. Warskow
- WAUGH, WILLIAM R.  
 "Control of Cracking in Concrete Gravity Dams" (2206PO5) with James A. Rhodes
- WEBB, G. M.  
 Clo (2007HW2) to "Correlation of Geometric Design Directional Signing" (1627HW2)
- WEBSTER, MARVIN J.  
 "Friction Factors in Corrugated Metal Pipe" (2148HY9) with Laurence R. Metcalf  
 "Spillway Design for Pacific Northwest Projects" (2129HY8)
- WEEKS, LOWELL O.  
 "Drainage in the Coachella Valley of California" (2158IR3)  
 Dsc of 2158IR3: M. Maasland (2327IR4)
- WEI, BENJAMIN C. F.  
 "Load Distribution of Diaphragms in I-Beam Bridges" (2036ST5)
- WEIDNER, C. KEN  
 Dsc of 1872PP1: F. C. Lindvall, L. E. Grinter (2042PP1)  
 Dsc of 1872PP1: Alfred C. Ingersoll and Frederick L. Hotes (2185PP2)
- WEIS, JOHN M.  
 "A Breasting Dolphin For Berthing Supertankers" (2175WW3) with Virgil Biancato
- WEST, P. J.  
 Dsc (2011SM2) of "Design and Performance of Vermilion Dam, California" (1728SM3)
- WEYERMANN, WALTER J.  
 Dsc of 1748PO4: F. L. Lawton (2013PO2)
- WHEELER, RAYMOND A.  
 Dsc (1987WW1) of "The Suez Canal—Its Chronicle and Bibliography" (1770WW4)
- WHITE, ARDIS  
 "Analysis of Rigid Frames by Electronic Computation" (2259ST9)
- WHITNEY, CHARLES S.  
 "Reinforced Concrete Folded Plate Construction" (2219ST8) with Boyd G. Anderson and Harold Birnbaum

- WHITE, D. E.  
See Thomas, H. E. (20601R2)
- WHITE, JACK N.  
"Flow Testing By Ammonia Displacement"  
(1905PL1)
- WHITE, ROBERT E.  
Dsc (1951SM1) of "Pressure Grouting Fine Fishes"  
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"Model Study of Mooring Forces of Docked Ship"  
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- WIESINGER, F. P.  
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- WILBUR, JOHN B.  
"The Importance of Balance in Engineering Education" (2028PP1)
- WILCOX, DONALD E.  
"Architectural Planning and Treatment of Airport Problems" (2191AT4)
- WILLETS, DAVID B.  
Clo (1986IR2) to "Salt Balance in Ground Water Basins" (1359IR2) with Charles A. McCullough
- WILLIAMS, D.  
Dsc of 1658AT1: W. K. Laing, G. S. Cooper, Morris E. Adams (1916AT1)  
Clo (2232AT4) to "A Water-Borne Runway" (1658AT1)
- WILLIAMS, G. M.  
"Federal-Aid Highways and Public Utilities" (2024PL2)
- WILLIAMS, J. B.  
See Wiegel, R. L. (2071WW2)
- WILLIAMS, ROGER H.  
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- WILLIAMSON, ROBERT A.  
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- WILLSON, R. J.  
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Corr (1987WW1) to dsc (1884WW5) of "Forces Induced on a Large Vessel by Surge" (1571WW2)  
Dsc (2326WW3) of "The Effect of Seiches at Conneaut Harbor" (2067WW2)
- WINKELMAN, D. W.  
"Engineering Education and the Construction Industry: The Industry and the Colleges" (1954CO1) with C. R. Maar
- WINTER, GEORGE  
See Mason, Richard E. (2099EM3)  
Clo (1952ST2) to "Lateral Bracing of Columns and Beams" (1561ST2)  
"Cold-Formed, Light-Gage Steel Construction" (2270ST9)  
Dsc (2234EM4) of "Columns Under Combined Bending and Thrust" (1990EM2)
- WINTERKORN, HANS F.  
Dsc (2180HW3) of "Early Soil-Cement Research and Development" (1899HW1)
- WOOD, HORACE W.  
See Sangster, William M. (2057HY6)
- WOOD, LYMAN  
Dsc of 1838ST7: Emilio Rosenblueth (2009ST4)  
Dsc of 1838ST7: L. Cizek, Milos Vorlicek (2043ST5)  
Dsc of 1838ST7: E. George Stern, Richard G. Kimball, Jr. (1952ST2)
- WOOD, LYMON C.  
Clo (2152ST7) to "The Factor of Safety in Design of Timber Structures" (1838ST7)
- WOODRUFF, GLENN B.  
Dsc of 1709ST4: C. Scruton, Henri Perrin (1988ST3)  
Clo (2152ST7) to "Wind Forces on Structures: Fundamental Considerations" (1709ST4) with John J. Kozak  
Dsc of 1709ST4: John S. McNowen and Dorris Hankins (1952ST2)  
Dsc of 1709ST4: Jacob Feld (1922ST1)
- WOODS, K. B.  
Dsc (2210HW3) of "Early Soil-Cement Research and Development" (1899HW1)
- WOODWARD, DOUGLAS R.  
Dsc (1986IR2) of "Water—A Limiting Resource?" (1754IR3)
- WOODWARD, RICHARD L.  
See Robeck, Gordon G. (2086SA4)
- WORTH, N. L.  
See Sarkaria, G. S. (2011SM2)
- WRIGHT, K. R.  
Dsc (1950HY2) of "Snowmelt Runoff" (1834HY6)
- WU, T. H.  
Clo (2325SM6) to "Geotechnical Properties of Glacial Lake Clays" (1732SM3)  
Dsc of 1732SM3: T. Cameron Kenney (2077SM3)
- WYERMANN, WALTER J.  
Dsc of 1748PO4: Judson P. Elston (1953PO1)
- YERLICI, VEDAT A.  
Clo (2323HW4) to "Reinforcement in Continuous Concrete Pavements" (1799HW3)  
Dsc of 1799HW3: Bengt F. Friberg (2007HW2)  
Dsc of 1799HW3: William Zuk (1918WH1)
- YEVDJEVICH, V. M.  
Dsc (2012HY4) of "Divining Rods Versus Hydrologic Data and Research" (1809HY5)
- YOUNG, D. H.  
"Torque-Loaded Continuous Beams of Profile Section" (1992EM2) with J. F. Brahtz
- YU, C. W.  
Dsc of 1878ST8: Ernst, George C. (1952ST2)  
Dsc of 1878ST8: Aron Zaxlavsky, W. W. L. Chan, Shaikat Mirza, Henry J. Cowan (2075ST6)



YU, C. W.

Dsc of 1878ST8: Herbert A. Sawyer, Jr.  
(2152ST7)

ZACHMANOGLOU, E. C.

See Volterra, E. (1896EM1)

ZAR, M.

Dsc (2186ST7) of "Installation and Tightening of  
High-Strength Bolts" (1974ST3)

ZAXLAVSKY, ARON

Dsc (2075ST6) of "Review of Limit Design for  
Structural Concrete" (1878ST8)

ZEGARRA, E. J.

Dsc (2077SM3) of "A Review of the Engineering  
Characteristics of Peat" (1937SM1)  
Dsc (2183SU1) of "Highway and Bridge Surveys:  
Preliminary Bridge Surveys" (1842SU3)

ZETLER, BERNARD D.

"Tidal Characteristics from Harmonic Constants"  
(2317HY12)

ZIELINSKI, P. B.

See Kolb, R. C. (2310HY12)

ZOLLER, J. HAROLD

Clo (2269HY11) to "Snowmelt Runoff" (1834HY6)  
Dsc of 1834HY6: K. R. Wright (1950HY2)  
Dsc of 1834HY6: H. C. Riggs (204HY5)  
Dsc of 1834HY6: Francis T. Schafer (2076HY6)

ZUK, WILLIAM

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ZWEIG, ALFRED

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